COMPUTERWORLD

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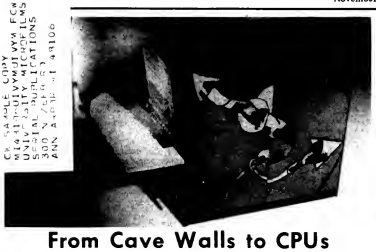
NEWSPAPER



From Cave Walls to CPUs

Artists have worked on many different media through the ages, including cave walls, canvases and even clothing. Now the computer has become a drawing board for several artists commissioned to help improve the atmosphere of the usually austere DP center. Dorothy Hood's IBM 2030 is shown above. See story and other photos on Page 2.

FTC Orders Career Schools To Pay for False Job Claims

By Patrick Ward
Of the CW Staff

WASHINGTON, D.C. – Thousands of students who once studied programming and keypunching at any of over 320 for-profit career schools may be able to receive up to 75% of their tuition back, according to a recent Federal Trade Commission (FTC) order.

The order applies to those students who paid more than $100 to take courses from the schools between 1969 and 1972 yet who never found a job substantially related to the field for which they had trained.

In a proposed complaint which led to a negotiated settlement of the case, the commission said the chain of franchised schools lured students with false promises of future jobs, free placement assistance and full refunds of "reservation fees" if students backed out.

The schools also induced students to sign "applications" which actually turned out to be legal commitments to pay for a course, the complaint said.

The schools involved were part of a bankrupt corporation which franchised them under several names, most commonly Career Training Institute, Career Training Center, Medical Training Center, National Auto Tune-Up Training Center and Keypunch Academy.

Under a settlement reached with the FTC and expected to be formally approved in 60 days, the backers of the bankrupt parent company, Career Enterprises, Inc., will refund up to $1.25 million to former students, noted FTC attorney Charles Hall.

The FTC estimated that 80,000 students paid an average of $330 to enroll in the vocational courses during the 1969-72 time period, but the commission has addresses for only 38,000, Hall said. He urged persons who think they may be

(Continued on Page 5)

Two Domestic Satellite Users Spend Less for Better Service

By Ronald A. Frank
Of the CW Staff

Two of the first U.S. data communications users to utilize domestic satellite service reported they have saved money while transmitting over higher quality circuits.

Both users are accessing the Western Union Westar satellite although each uses a different carrier. Southland Corp. in Dallas is using earth station facilities of American Satellite Corp., while Computer Sciences Corp. in Los Angeles has leased a circuit directly from Western Union.

Southland is transmitting remote batch data from a 360/20 Hasp workstation in Bronx, N.Y., to its 370/158 in Dallas. "We're just treating this like any other remote job entry location," said Rulin Brough, director of management information services.

But some modifications were required before the link was operating. Specifically, Southland modified the block length of its Hasp records from 400 bytes to 1,200 bytes. The company made the modification with in-house software changes in about two weeks, despite doubts on the part of IBM customer engineers that the Hasp changes would work on the 360/20. The main purpose of the longer block lengths is to reduce the line turnarounds and thereby lessen the impact of the satellite's propagation delay, Brough explained.

"The only time the propagation delay gets in and starts giving you difficulty is when you start running into a lot of error conditions on the local loops. This slows down the handshaking, so we increased the number of bytes going down the line." As a by-product of the longer block size, the printing speed of the receiving station has increased.

The Southland link is operating at 7,200

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U.S. Seeks AT&T Breakup To Open Market, Cut Prices

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – Users may have to adjust to radically new ways of conducting their operations if the Justice Department is successful in a new antitrust action against the second major force in the developing computer/communications field.

With the filing of a major suit last week against AT&T, in addition to the ongoing case against IBM, the U.S. Government has firmly set its sights on the kingpins of the industry and the two major firms upon which users rely.

In the AT&T case, as in the IBM case, the government is asking for a breakup of the existing structure into smaller units, which it believes would open competition in the business substantially and ultimately lower prices.

Ironically, both IBM and AT&T have been in the dock at the same time before – with both cases resulting in negotiated consent decrees in 1956 under the Eisenhower administration after being filed by the Truman administration.

In the new suit the government charged that AT&T, Western Electric, Bell Laboratories and other coconspirators, including the 23 Bell operating companies, engaged in unlawful conspiracy to monopolize the telephone and telecommunications business in the U.S. It asks that the AT&T Long Lines and Western Electric be separated from the rest of the company.

Commenting on the action, AT&T Board Chairman John D. deButts said "we are confident we are not in violation of the antitrust laws and are astonished that the Justice Department would take its present action with apparent disregard for its impact on the public."

The proposal to break up the company "could lead to fragmentation of responsibility for the nation's telephone network. If that happens, telephone service would deteriorate and cost much, much more," deButts claimed.

Eliminate Potential Suppliers

The suit said AT&T has attempted to "prevent, restrict and eliminate" competition from other telecommunications companies and has given Western Electric all of the Bell System equipment business in order to eliminate competition from other potential suppliers.

Areas in which potential competitors exist, the suit said, include the specialized common carrier field for private-line and data service. At present, the suit added, Bell accounts for over 90% of this $1.1 billion private-line market.

The suit charged that the Bell System attempted to obstruct this business, as well as the interconnection and terminal markets, by restricting or raising barriers to firms who wanted to connect equipment to the telephone network.

In addition, it charged that Bell attempted to monopolize or restrict competition in the field of domestic communications satellites for data and other transmission.

As relief for the violations, the government asked that AT&T be forced to divest itself of Western Electric, its manufacturing arm. The suit further suggested Western Electric be divided into at least two firms so that a new monopoly in the telephone equipment business would not be formed automatically by the divestiture.

Western Electric had revenues of around $7 billion last year, the suit added.

AT&T would also be required to divest itself of its Long Lines Department, further increasing the opportunities for the specialized carriers.

(Continued on Page 4)

POS in Congressional Dock?

By Patrick Ward
Of the CW Staff

WASHINGTON, D.C. – A consumer tosses a can of mushrooms into his shopping cart and wheels across the store to the fresh vegetable section. He notices a package of fresh mushrooms there, picks up his canned version to see how the prices compare and finds only the black and white lines of the Universal Product Code (UPC).

Once home, he tries to check how the price of the mushrooms compares with the price of those he bought in another store last week. But he doesn't have the sales slip for last week's shopping, and the cans from both markets don't have prices on them, only the UPC that he can't read.

Will the shopper be the big loser in the supermarkets' rush to point-of-sale (POS) systems? This possibility is on the minds of consumer advocates, who have plenty of questions about the supermarkets' new computerized pricing and inventory technique.

So does Sen. Frank Moss (D-Utah), chairman of the Senate Commerce Committee's consumer affairs subcommittee.

Moss will chair a round table symposium on Dec. 11 to explore these questions from the consumer's view-

(Continued on Page 4)

CW Special Report on Computers in Retailing Follows Page 20

On the Inside This Week

'Enhanced' Equipment Makes DP Center Work of Art

Artist Robert Guillemin's IBM 2030 CPU depicts scene from the Old West.

NEW YORK – Art for art's sake is a centuries-old concept, but now an innovative program designed to humanize usually sterile DP installations is creating art for people's sake.

And – as the accompanying photos from an exhibit here indicate – the new art is a far cry from IBM "keypunch gray" or even the pastels that have been used in recent years to try to alleviate the antiseptic feel of most computer centers.

Best of all, it's free – if the user leases a computer system from the Computer Leasing Division of James Talcott, Inc. here.

Any user ordering equipment or renewing leases from Talcott for CPUs will have the opportunity to select any one of the program's 14 participating artists to create signed original paintings – ranging from realism through abstract to pop and op – for their equipment. When the lease is completed, "what you see is what you get."

Roy DeForest paints on an IBM 2314 direct access storage facility.

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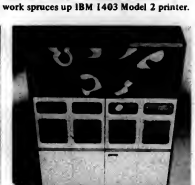
Maud Gatewood's scenic view on an IBM 2803 tape control unit.

Irving Amen's Picasso-like work spruces up IBM 1403 Model 2 printer.

LeRoy Nieman's tennis scene enlivens IBM 2803.

Emilio Cruz puts birds on an IBM 2911 switching unit.



Jack Roberts Jr.'s "mountain view through VW bus window" adorns IBM 2841.

Satellite Users Spend Less on Better Circuits

(Continued from Page 1)

bit/sec using Codex modems. It has been in operation since Oct. 23 and is now used to transmit data about nine hours each day.

To test the satellite link, Southland initially ran two unbuffered 2740 terminals. One was on the American Satellite circuit while the other ran on an AT&T private-line circuit. In transmitting a 38-page report, the terminals finished within 34 seconds of each other, Brough said.

The satellite link is being used to transmit daily payroll, inventory and related data from Gristede's grocery stores, and Barricini and Lufts candy shops in the New York area. All are Southland subsidiaries.

In addition to its higher reliability, the satellite circuit is saving Southland about $400/mo. The AT&T terrestrial line cost over $1,100/mo, while American Satellite charges $750/mo for the same voice-grade line between the same points, Brough said.

The satellite-transmitted data is received on a Memorex 1270 controller which is attached to the 158. There have been no problems for the 1270 in handling the modified Hasp blocks, Brough said.

Southland will switch to additional satellite links "as fast as earth stations are built and we can get hooked up to them," he said.

Computer Sciences began using the Westar link in September between Los Angeles and its site in Oak Brook, Ill. The time-sharing firm has used the voice-grade circuit to transmit at 9,600 bit/sec using Codex modems between a Comten Model 20 remote concentrator and its Univac 1108 in Los Angeles. Data 100 terminals have also been used running at the same speed.

A variety of terminals is connected into the Comten front end in Oak Brook including "anything that looks like a 2780 or a 3780," according to James Collard, manager of network engineering for the Computer Sciences Infonet Division.

A terrestrial line between the two locations costs about $1,700/mo while the Western Union facility costs $1,000/mo, Collard said. This amounts to about a 40% difference, he added.

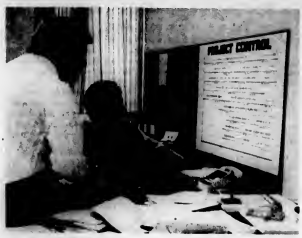
"We've had this line in for two and a half months now. It went down once because of a phone company local loop problem but that was the only time."

Computer Sciences is negotiating for 12 satellite links to take advantage of an additional 20% discount from Western Union. With the additional circuits on the Infonet system, the company can save almost $11,000/mo, Collard estimated, compared with current AT&T private-line rates for terrestrial facilities.

Collard said he decided to go directly to Western Union because the carrier had a second backup ground antenna to take care of the "equinox problem." On or about Sept. 21 and March 23, during a three-week period, day and night are about equal because the sun is centered over the equator. During this period, a single earth station antenna would have to be turned to the backup Westar satellite to avoid the high noise levels being generated by the sun, he said.

Both users said the AT&T local loops were the least reliable portions of their satellite links. In each case, the satellite carrier is providing the complete facility including the interfacing with local phone companies for local loops.

PHASE 2 OF SYSTEM LIFE: IMPLEMENTATION



When did you last finish a programming project on time? Or within the budget?

You've got good people. Your time and cost projections are reasonable.

But Implementation — that long pull from freezing the specs to start of verification testing — eats up more time with each new application.

Can we interest you in a major boost in programmer productivity?

System implementations don't seem to be improving much. Most projects still come in late, and over budget.

They bog down in detail work. Programmer errors cost a few man-days here, more there.

Programmers spend months writing repetitive code for similar or identical procedures. Bugs fail to show up in unit test, then crop up later in time to idle ten people instead of two.

Five useful software packages — the Talent Amplifiers — from ADR, attack these delay factors. They catch errors, automate repetitive detail work, and handle the clerical chores of implementation. They free programmers and analysts for their professional work.

First, there is MetaCOBOL. It automates such routine programming functions as input-output, report writing, file accesses, and data-base manager calls. MetaCOBOL can eliminate two-thirds of the manual coding in large projects. One parameterized MetaCOBOL statement input to the Translator can produce output of a dozen or a hundred lines of COBOL.

Procedures provided with the translator generate standard COBOL for such functions as IMS calls. Or you can easily write your own procedures to meet unique needs, using macro-writing facilities in the Translator.

The Translator diagnoses syntactical errors, and identifies inefficient COBOL — using ADR's criteria or yours. The other MetaCOBOL modules, the Test Data Generator and Run-Time Debugging Aid, simplify and improve test procedures and the elimination of logical errors. And the COBOL Performance Monitor can provide a short-cut to finding production execution inefficiencies.

Before any code exists, use the CHART language of Autoflow II's Automated System Charter to create system diagrams automatically, and update them easily.

As code accumulates, use Autoflow II's language Module Analysis Processors to tabulate all data-name references and statement labels. And to summarize all statements which alter selected data, grouped by data name.

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Propose Necessary Legislation

National EFTS Commission to Study Use, Questions

By Don Leavitt
Of the CW Staff

WASHINGTON, D.C. – A 26-member National Commission on Electronic Fund Transfers is now being organized to study and recommend actions and legislation, if needed, to aid development of electronic fund transfer systems (EFTS). Announcement of the membership is expected by year-end.

Chartered under a law signed in late October, the commission has been well received by various concerned associations, but questioned by at least one observer of the EFTS scene.

Working with a $2 million budget, the group is expected to send an interim report to President Ford within one year and present its formal findings and recommendations no more than a year later.

The commission's inquiry will be very broad, according to Howard Beasley, minority staff director of the Senate Banking Committee.

The study will consider the mechanics of transfer systems and questions of privacy of information and entry into the system, he said, as well as costs and who should pay for the operations.

Makeup of the group is defined by the enabling legislation and includes representatives of federal agencies, various facets of the banking and "thrift" industry, credit card organizations, state governments and consumers. Intended to have no bias, it will be chaired by a member designated by the President, Beasley noted.

The American Bankers Association, the independent Bankers Association and the National Association of Mutual Savings Banks have all suggested the names of people who might serve on the commission, though the mutual bank group refused to publicize its "nominee" since "that would appear to be pressuring the White House."

The Association of Data Processing Service Organizations (Adapso) has written to Ford asking that it "receive strong consideration for membership on the commission."

'Sounding Board'

Less enthusiastic about the commission's potential, Helene Duffey, vice-president of Datavision Associates, Inc., an EFTS research organization, feit that so much is already happening in EFTS, the commission's primary value may be to serve as a "national sounding board of ideas."

"Banks and 'thrifts' and others are going ahead with a number of EFTS experiments and operations. There's an awful lot going on 'underground,' " she explained. "The innovators just can't – or won't – wait to see how the commission says things should be done.

"The commission may help resolve some specific consumer-type issues," she thought, "and it should provide the Justice Department [which will be on the commission] with guidance on what it should reasonably do or say in EFTS situations it faces."

Automated Checkout Rouses Interest On Capitol Hill

(Continued from Page 1)

point, he noted. Industry will have a chance to make a presentation before a panel of consumers and economists.

"It is just not as easy to price shop" in a POS-oriented supermarket, a commerce committee aide to Moss said. And the same problem applies to the shopper comparing things from different stores at home, unless he still has the sales slips, he said.

"I think the potential inflationary impact is incredible," the aide stated, adding that more difficult price shopping could make it easier for supermarkets to boost prices.

Moss wants to keep the prices stamped on supermarket items; the aide said. Markings under the shelf aren't enough. "Our experience is that the product isn't always over the price," he said, "and sometimes you have to dabble around the shelf to figure out what price is which."

It's also "very conceivable through oversight or whatever that a store may change the price in the computer but may forget to change the price on the shelf," the aide stated.

"Another question we want to raise," he said, "is how the industry which allegedly has such a low profit margin can afford to make such a capital improvement costing $15,000 per shopping lane."

And if the systems are so cost-beneficial, the question remains whether the savings will be passed on to the consumer, the aide noted.

Another concern centers around the in-store computers that total the prices and weigh purchases. Most states have weights and measures laws to check supermarket scales, the aid said, and "it seems to me that we ought to have the same kind of provisions . . . to ensure that the price in the computer is the same as the price on the shelf."

Personal privacy is another question, he continued, since supermarkets will have the capability to store information about customer credit, for example, in their in-house computers. "We are a little worried as to who would have access to that information," the Senate aide said.

The Senate aide ended his "show-me" remarks by saying that supermarkets praise POS for being "twice as fast as their existing [check-out] system, but they're going to have half as many lines."

AT&T Breakup Sought To Open Competition

(Continued from Page 1)

The suit indicated the government might ask that Bell Laboratories be separated from AT&T, but it left that decision to a later date.

The suit is the largest ever filed by the government in terms of assets, since Bell has assets valued at over $67 billion.

The government indicated last week it would take at least three years for the case to come to trial and, with appeals, the case could take up to 10 years if it is not settled by a consent decree earlier.

ACM Takes Stand Against Uncontrolled Use of UIDs

By Edith Holmes
Of the CW Staff

SAN DIEGO – The council of the Association for Computing Machinery (ACM) took its first clear stand against the uncontrolled use of universal identifiers (UIDs) at a recent meeting here.

Stating its "concern over the absence of legislative safeguards against the misuse of all universal identifiers, including the Social Security number," the council urged "prompt generation and passage of such legislation."

The ACM council noted that the existence of a UID makes it possible to match and combine records about individuals and that the Social Security number is rapidly becoming a *de facto* UID.

While not usually economically or technically feasible with manual data processing methods, "this matching is relatively simple and inexpensive with the use of computerized data banks that are able to communicate with each other," the council said.

Though computerized matching "simplifies technical problems and offers benefits both to individuals and to society," the body concluded "present safeguards (technical, organizational and legislative) are inadequate to prevent unacceptable abuses of the right to personal privacy that the combination of a UID and the use of computers makes possible."

The council acknowledged its membership's awareness of the scope of this potential misuse of computers by a vote of 22 in favor of the resolution, with one councilman opposed and another abstaining.

Debate on the resolution represented the council's struggle to determine "whether ACM should be a scientific computer society or a group dedicated to the practical applications and consequences of computing," one council member suggested.

Another member argued that "this resolution is just the kind of thing this council should be doing. The universal identifier represents one issue where we have some technical competence on which to comment, and I think we should do so."

But while he was sympathetic to the intent of the resolution, another councilman contended "the Social Security number has become a symbol of the frustration resulting from the misuse of data banks.

"Wouldn't ACM be stirring up useless emotion by supporting this measure?" he asked. "Perhaps we should create a position paper on privacy safeguards in its place."

While the final vote indicated most council members felt more than a technical responsibility to comment on the privacy issue, other questions such as budget, long-range planning and publication revision further indicated the council's general confusion over ACM's purpose.

FTC School Proposals Draw Fire

BOSTON – Proposed Federal Trade Commission (FTC) regulations on privately owned vocational schools are "intentionally destructive and frightening," a Control Data Institute official said.

David C. States, general manager of Control Data's Education Services International in Minneapolis, told an FTC hearing here that the proposed regulations are "in fact punitive and not informative."

The regulations would prohibit nonspecific earnings or employment claims by a school, require factual documentation for any specific earnings or employment claims made by the school, require disclosures of dropout rates and require disclosure of placement rates if any placement claims are made.

They also call for a 10-day "cooling-off-reaffirmation period before contracts become effective and provide for pro rata refunds to those who do not complete courses.

States said that Control Data Institutes have disclosed placement information and offered pro rata refunds and cooling-off periods for years.

He was especially critical of a proposal which would not allow school advertisements to use any statement regarding the "general conditions of employment demand in any employment market now or at any time in the future."

States said that "to have the FTC seriously propose that it has or should be given the power to prevent citizens of this country . . . from making truthful statements in advertising seems at best bizarre."

The president of the Eastern Massachusetts Better Business Bureau, however, called the proposals "an excellent regulatory scheme toward curbing the most prevalent abuses in the vocational and correspondence school industries."

FTC Orders Rebate For False Job Ads

(Continued from Page 1)

eligible for tuition refunds to contact him at 6 Pennsylvania Ave., N.W., Room 263, Washington, D.C. 20580.

The FTC also has vocational school cases in litigation involving Control Data Corp., Electronic Computer Programming Institute and Lear Siegler, Inc.

As in the Career Enterprises case, the issue is "whether or not the training as represented would, in fact, enable a person to obtain employment in the field in which he was trained," Hall explained.

He said if the FTC finds that a substantial number of students did not find their target jobs, in contrast to what the school had predicted, the commission would conclude that the courses were "virtually worthless for the purpose of employment."

CDPers, Where Are You?

CHICAGO – The "super mobility" of DPers is complicating efforts by the Institute for Certification of Computer Professionals (ICCP) to contact the 15,000 holders of the Certificate in Data Processing (CDP).

Any CDP holder who has not received the ICCP's letter of Oct. 5 is urged to send the institute his correct address, the year the certificate was issued and the certificate number, if available.

ICCP can be reached through P.O. Box 1442, 60690.

Encapsulation Suggested for Security

Multiuser Systems Seen Unsafe From Penetrators

By Edith Holmes
Of the CW Staff

SAN DIEGO – No multiuser operating system can be called certifiably secure from the malicious attacks of skilled penetrators, according to Richard L. Bisbey II of the University of Southern California Information Sciences Institute.

"While some progress is now being made in the constructive design of new, verifiably secure operating systems, that work is not expected to become operational immediately," he said at an ACM '74 session on privacy and security. "In the meanwhile, large numbers of disparate computers and operating systems currently exist for which security is an important concern."

Accordingly, Bisbey proposed encapsulation as a means of providing a certifiable, reliable means for multilevel computer security on existing batch and remote batch systems.

This method of obtaining security depends on limiting the access of various devices to the system by routing the signals from these peripherals through a minicomputer for clearance, Bisbey explained.

He advocated encapsulation because of "the hardware and software simplicity, the potential for spooling a unit record I/O, the ability to extend read-only sharing among operating systems and the verification potential of the minicomputer system."

Equipment

The equipment required for encapsulation basically consists of a minicomputer with some memory, a disk spooling to unit record devices, a crossbar switch for operating systems without the necessary switching capability and consoles for the mini and each operating system running through it.

Bisbey noted that OEM catalogs price this combination of hardware in the neighborhood of $50,000.

He added it would take approximately two man-years to develop the necessary software, consisting of 2,000 to 4,000 instructions.

In addition to incorporating program verification, the software for the encapsulation system would free the user from any further programming.

Encapsulation would provide users with redundant information storage and less multiprogramming with only minor modifications to most operating systems, he indicated.

Additional economies include flexible job scheduling, a security insensitive to operating system changes, spooling at a relatively low cost and a low incremental expense for securing other operating systems following the first application of encapsulation, Bisbey remarked.

'Security Kernels'

By developing a prototype security system on a PDP-11/45, Mitre Corp. is working toward the design of "security kernels" for Multics systems to be available to users in or around 1977, according to Edmund L. Burke of Mitre.

Based on an effort to provide proof that a proper level of security exists before a system can be accessed, his firm's approach depends on an abstraction of the notion of security advocated by the Department of Defense, Burke said.

Building on the concept of a "reference monitor" developed by the Air Force, Mitre has constructed a finite state model for security.

Burke explained that the model calls for a certain number of well-defined transition functions to move the operating systems from one "secure state" to another.

Mappings

Basically a proof of the existence of security, the model had to be converted through a series of mappings from a mathematical representation to machine language, he commented.

Burke said his company has completed the design of these transition functions, or security kernels, for the PDP-11/45.

In developing a similar system for Multics users, he noted the firm will have to identify security kernels to perform very specific tasks in order to keep the system out of any compromised state.

"The success of the technique rests with the development of the mathematical model," he emphasized. "While this model may be difficult to perceive for complex systems, problems can be decomposed into small parts yielding a framework for developing large security systems."

More Math

Richard W. Conn of Lawrence Livermore Labs also advocated a mathematical approach to the development of security systems.

"Work directed toward securing current systems has, for the most part, taken the form of penetration attempts," he said. "While these have led to the identification of generic weaknesses in operating systems, such efforts have not yielded a formal approach to security.

"A method showing greater promise in identifying trouble spots, as well as characterizing existing operating systems in a more general sense, lies in forming graph models in which nodes are program modules or data structures, and arcs are access or shared resource synchronization paths," Conn asserted.

By identifying the fold points for a hierarchy of graphs, Conn hopes to evaluate the security problems of moderate-sized operating systems.

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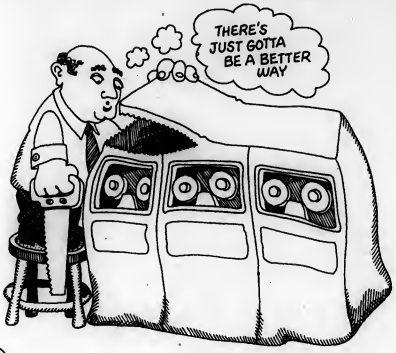

Election Returns A Guaranteed Bet At N.Y. TV Station

SYRACUSE, N.Y. — The efficiency of the computerized election coverage at a television station here even took its designer by surprise.

Milton Goetz, manager of Information Systems for GE Broadcasting, bet in an office pool that returns at WGRB-TV would be on the air 20 minutes after the polls closed at 9 p.m.

He lost by eight minutes — the readings came on at 9:12.

For its third year of automated returns, WGRB increased its coverage to include 11 counties and 988 polling stations. Vote counts were gathered at each poll by American Legionnaires who called tallies into one of 22 legion posts.

At each post a teletypewriter operator took over and transmitted the figures to GE's information processing center in Brook Park, Ohio.

Results were relayed back to the studio and displayed on a Hazeltine 2000 with a camera trained on it. Another Hazeltine sat at the news editor's desk, and a Terminet 300 printer pulled off race results for individual reporters.

The entire process, from the legion hall to Ohio and back, took a maximum of three minutes.

EGGcellence

It won't be long before the traditional Thanksgiving turkey is meatier and in greater supply. Scientists at the Nicholas Turkey Breeding Farms in Sonoma, Calif., are using an IBM System/3 Model 10 to help determine which turkey strains will be bred to produce better quality generations. The computer maintains and analyzes pedigree information on tens of thousands of birds to help improve genetic traits of high egg production, fertility, growth rate and meat-to-bone ratio.

FEDERAL ADP PROCUREMENT

BASED ON YEARS OF PRACTICAL EXPERIENCE

The author of this guide, Terry Miller, has had 15 years experience in the Federal sector working as a computer equipment analyst and as a procurement analyst in the contracting area.

While at the GSA, Mr. Miller authored many solicitation documents and reviewed RFPs submitted by other Federal agencies. He was the project officer for various mandatory requirements contract procurements including ones for tape and disk drives, plug-compatible memories and remote computing services.

Mr. Miller is the President of Government Sales Consultants, Inc., a firm that offers consulting services and seminars to computer-related companies and Government agencies seeking help in ADP procurement.

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This guide includes the pertinent information on how current procurement rules and regulations are supposed to work in **theory.** But, **more importantly,** it tells you how it has worked and is currently working, in day-to-day practice.

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In addition to GSCIs now-famous 3-day seminar overview — "ADP Procurement in the Federal Government", courses on specific topics are being presented on a regular basis. The current course schedule now includes such topics as:

- Pricing Strategy
- Unsolicited Proposals
- ADP Schedules
- The Government Contracting Team
- Negotiations
- Introduction to Government Organization

New courses will be added and plans are underway to have them available in most major cities.

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Basic Facts About Federal Procurement
Two Beginning Steps

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Editorials

ACM Reflections

"How was ACM '74? How did it go?" Hard to say.

Large. Certainly successful in terms of attendance. More people there than at any national ACM get-together since 1967, according to someone on the program committee.

Great weather. And "Taming of the Shrew" in an outdoor theater at noon, for those who wanted to listen.

Broad spectrum of topics in the technical sessions. And good interplay between audiances and panelists—with a few exceptions — suggesting a flow of ideas even if not always agreement.

But nagging impressions dim the picture. The registration area was awash with confusion. Not just normal convention confusion — disorganization. Hard to tell whera to register. No good maps of where meeting rooms were in relation to the registration eree. No place, apparently, for speakers to get out of the swirl and pull their thoughts together.

The opening session: A "second place" award for a student paper, but no first place in the same category (interesting logical position). And Prof. Don Knuth's Turing award lecture extolled programming es an art, after which the attendees went off to sessions on "structured programming," "automatic system design" and "software physics."

The sessions put on by the Special Interest Group for Business Data Processing were relatively lightly attended and tended to be concerned with topics CW might consider on the esoteric side of business DP. But et least the sessions were held; the user was considered. And that's good.

Having the sessions at the civic canter, miles from the suggested hotels — or, apparently, anywhere else that people could sit down to discuss enything in depth — was a frustration, and one that just didn't occur last year, for example, when ACM '73 was in the Hyatt Regency hotel in Atlanta. Conferences are more than the technical sessions, but ACM '74 overlooked that simple, if time-worn fact.

That was the real problem, the reason it was hard to feel comfortable even though the material presented was generally good and the weather, magnificent.

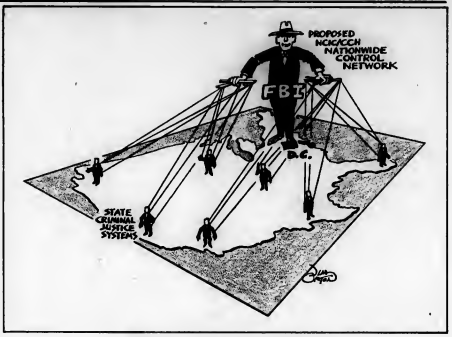
Reinforcing the Syndrome

Police agencies are increasingly using criminal history information in prearrest situations [CW, Nov. 13], reinforcing the syndrome of "if it comes from the computer, it must be true."

That is not always the case, unfortunately. Much of the data contained in the computerized criminal history systems is erroneous — some estimate the error rate as high as 50% — out of date or misleading.

To use such data in a decision that can affect a person's life, career and family is clearly unwarranted.

As has been stated in the past, it is time for policy-makers to take a hard look at the computerization of criminal information and require the proper agencies to either make sure their information is accurate or to drop such systems.



The Puppetmaster

Letters to the Editor

Bell Interconnection Claims Designed to Prevent Net Harm

I would like to comment on the recent article "FCC Files Refute Bell Interconnect Claims" [CW, Sept. 25].

The Bell System has maintained that uncontrolled interconnection of customer-provided equipment can cause harm to the telecommunications services of others and to our own telephone company people.

This was a conclusion reached by the National Academy of Sciences (NAS) in 1970 after the Federal Communications Commission (FCC) requested a study of the telecommunications network. The NAS stated there was a clear need to protect the telephone network from a variety of harm and hazard that could be caused by customer-provided equipment.

Our approach to permit interconnection of customer-provided equipment was designed specifically to *prevent* harm from occurring to the extent considered feasible — that is, the authorized connection of customer-provided equipment would not produce the harms stated by the Bell System and by the NAS.

It is extremely difficult to isolate the source of harms to customer-provided equipment where such harms can or do occur and pinpoint the reasons. But despite the preventive nature of the Bell interconnection policy and a substantial amount of information to the FCC on harm and to the National Association of Regulatory Commissioners (Naruc) during its recent investigation. We recommend reading our letters to the FCC of: Jan. 10, 1972; Feb. 10, 1972; Jan. 15, 1973; Feb. 12, 1973; April 26, 1973; Aug. 3, 1973 and July 12 of this year, plus our testimony in the Naruc investigation.

Paul Petrotta
Press Relations Supervisor
AT&T
New York, N.Y.

Rumors of IBM/U.S. Talks Should Have Died Aborning

Despite IBM's categorical denials, *Computerworld* insisted on reporting a rumor in the Nov. 13 issue that John Opel, IBM president, "has been in Washington, D.C. over the past month and a half discussing possible settlement of the [Justice Department] case with government officials." And CW reported it in a manner that strongly lent some credibility to the rumor, despite the IBM denial which was mentioned.

So, for the sake of those readers who may have been misled, I'd like to repeat that there is absolutely no truth to that rumor. IBM is not engaged in settlement discussions with the government.

If CW had checked with the Justice Department and the other government officials named in the story, it could have easily determined that the rumor was ill-founded nonsense and not worth reporting. That also would have made CW suspect the motives of the "industry sources" that have insisted on spreading this baseless rumor to newsmen for the past several weeks.

I know some rumors die hard with many reporters, but this one deserved to die aborning. It's hogwash.

J.R. Young
Director of Information
IBM
Armonk, N.Y.

Censure of IBM Hikes Unfounded...

The Oct. 16 editorial was a shallow and irresponsible commentary on IBM's equipment rental price increase.

The editorial considered only equipment manufacture cost and maintenance in the justification for a price increase. I believe IBM would consider numerous other related costs, an obvious one being the costs associated with the collection of the monthly rental.

The IBM pricing policy is a sound approach: all users pay the same price for a given service. The editorial concluded that this pricing policy gives IBM "an extra profit margin" on equipment in operation. The only conclusion that is actually available is that the return on equipment may vary.

The editorial openly admitted to being aware of an inflationary economy. Bravo! The editorial then totally ignored inflation by equating 1972 and 1974 dollars and proceeding therefrom to "windfall profits."

John S. Rawlings
Houston, Texas

...Or Do Users Really Suffer?

The editorial chiding IBM for boosting prices on the installed user base makes an excellent point indeed.

The computer user who rents a typical 370 system, already installed, will be paying an additional $14,000 to $51,000 next year for the privilege.

When people start getting computers for what they do, instead of what they are called, the whole user community will benefit. But as long as they keep playing the numbers game under IBM's rules, they will keep paying the price.

James F. Benton
Executive Director
Computer Lessors Association
Washington, D.C.

(Other letters on Pages 11, 12 and 14.)

Letters to the Editor

A Few More Useful Hints For Programming Managers

Paul Torell has done us a service with his viewpoint, "Programmers as Easy to Lose as a Needle in a Haystack" [CW, Sept. 18].

It is inevitable in a subject as extensive as the one he has chosen that not all points would be covered. Therefore, I should like to add a few points which programming managers could find useful.

1. Create a leadership vacuum. Do not provide any direction to the people under you and at the same time do not indicate any interest in what they're doing or how they spend their time.

2. Related to the above point, remain aloof from your people. Do not discuss any problems they may be having. Make it a labor of Hercules for them to meet with you. After all, how can a manager get ahead if he is spending time with his people instead of spending it in political maneuvering.

3. Do not tell your staff how the work they are doing fits (if at all) into corporate strategy (a.k.a. "the big picture"). Do not explain to them what this "big picture" is (assuming it exists and that someone is articulate enough to explain it).

4. Let rumors run freely, especially if they relate to staff cuts, salaries or the fate of projects.

Doubtless, other readers have their own favorites. I feel, however, that these points, added to the ones offered by Torell, constitute a formidable arsenal in the hands of DP and programming managers.

G.T. Newkirk

Union City, N.J.

Despite Popular Belief

Error Control Systems Can Be Practical

By Burton Grossman
Special to Computerworld

Error controls are possible, although few people in the data processing industry believe it. One way to promote error control as an essential part of all DP operations is to provide case histories of actual, successful experiences to sensitize users to the feasibility of such systems.

My experience with error-control systems is fairly unusual, because I had the rare experience of designing and installing an error control system for a company as a consultant and then going to work for the company concerned and having to live with the system in practice.

The system was based upon the use of a four-man error analysis committee. This committee consisted of the assistant operations manager, the programming manager, the quality control scientist and one of the scientific supervisors. (The firm was a geophysical data processing company, so the scientists in this case happened to be geophysicists. They would normally be using department representatives.)

This committee met weekly and as its name implied, reviewed all known occurences of errors, together with an analysis of what had really caused the error.

However, the committee went beyond reviewing. All reported error occurences had to be *resolved* to the committee's satisfaction within one week. And that meant going further than simple finger-pointing, although there was plenty of that at the beginning.

The resolutions were divided into 12 categories:

- Machine malfunction.
- System software malfunction.
- Supplies failure (bad tape, etc.).
- Logic error in program.
- Bug in program.
- Clerical or mechanical mistake in input.
- Geophysical or judgment mistake in input.
- Gross or misleading documentation.
- Source data recording problems.
- Client instructions regarding source data improper.
- Operator error (wrong disk mounted, etc.).
- Library error (mismarked tape, etc.).

The secret of this system was phrasing the categories in terms of "errors," rather than unfortunate occurences. Documentation, for example, was considered to be the cause not only if there was an actual inaccurancy in it, but also if it could be interpreted as misleading. The action of the person misled by such documentation – the operator or the programmer – was not considered to be the cause in such cases, although it might have been the immediate cause of the error.

The first six months using the system was hectic and finger-pointing was common. Later, however, the operation of the committee fell into place as not only meaningful error control evolved but also as many valuable side effects were noticed. Each of the people concerned started showing a deeper feeling for the "other guy," and effective cooperation between the various departments increased.

Some specific results were:

- Easier-to-use input procedures.
- Better documentation.
- More efficient use of programs.

We also had – and it was a tremendous benefit – well-documented errors to prod our vendor on hardware or operating system problems.

The cost of the operation was hard to determine. The committee meetings took about two hours weekly, or eight man-hours a week. (However, we met before normal working hours so it did not interfere with other schedules).

Sufficient Justification

In general the system cost about 1% of the budget. The savings in machine time alone were sufficient justification for this, as within two years the "rerun due to error" rate had dropped from 13.6% to 5.7%.

Professional Practices

This meant a savings of almost 40 hours of Univac 1106 CPU time per month.

In addition, customers received better service, with a cut of at least two days in the turnaround cycle, while film and other supply costs were reduced by almost $2,000 a month.

As remarked above, I believe that only through the publication of these case histories will people come to appreciate the possibility of error control systems being practical as well as desirable. That these do become part of normal DP practice is, in my judgment, essential for the onward development of our profession.

Grossman is the principle of Burton Grossman & Associates, DP consultants, Houston, Texas.

The Professional Practices column is coordinated by Alan Taylor and the editorial department of Computerworld. *Articles should be sent to the Professional Practices Page, c/o* Computerworld, *797 Washington St., Newton, Mass. 02160.*

IBM Philosophy Questioned

Greater Reliability, Repeatability Needed in Future

The Taylor Report
By
Alan Taylor, CDP

The IBM concept for its Future Systems (FS) consists primarily of emphasizing user terminals that are pretty individual and are supported by some form of inhouse computer capable of running batch work as well as giving this support.

The concept is good in some ways. User-oriented terminals are already emerging and are going to get more and more powerful. Indeed, the concept of the general-purpose computer itself may be under attack, as specialized computer vendors get better and better at delivering just what a particular application needs.

But it isn't just fancy application-oriented buttons that users are going to be interested in. Today, computer problems are as much in the underpinnings as on the application surface. In addition, the future users are going to want better quality service than they currently are able to obtain.

FS, in order to match the marketplace, must therefore start providing this better quality service, as well as more user-oriented service.

As an example of one of the types of better service that is nowadays possible, a characteristic of Trilog Associates' system management processor (SMP) program can be cited.

This program is basically an executive and documenting system which includes, among its other capabilities, the standard capability of being able to change programs as the programmers think necessary. Thus, for instance, a new facility can be added to a payroll package on March 14, and some-year-end material can be put into it in December and taken out again in February.

This type of facility is, of course, needed since even the most static programs must be responsive to changing requirements.

At the same time SMP understands, like many other programs, that this type of thing must be done with care. It keeps records on who changed the program and when the change occurred. So far, so good.

Still, it's quite a standard 1974 system, nothing really big for the future. But that's only the surface story, and in the future it will be whatever is under the surface that counts.

Holding Pattern

Flexible, recorded changing does not complete the category of what SMP copes with in the area of program control. It does, admittedly, do all this – but it never, never actually changes the programs it holds.

All it does is keep a record of the latest sets of change and, if the programs are called for, it normally supplies the latest set. But it does not throw away the old sets and, when requested, it can reproduce the programs as they stood on last March 27, on April 2, or at any other revision level!

This capability to reproduce programs run at an earlier point is, of course, absolutely essential in an audit – a real audit, that is. One of the points that the *Wall Street Journal* has made in discussing computer frauds is that it is currently impossible to know afterwards what actual program was really run.

As long as this is so, there is a clear danger that this uncertainty can either conceal the workings of a fraud or later can cover up the identity of guilty people even without taking the fraud into consideration.

This lack of ability to compare earlier programs with new ones hides the impact of poor programming standards, and it also hides the advantages of good programming standards and capability, reducing the chance that good programmers and systems analysts will obtain their just rewards – another item which we will want to change in the future.

Not a New Concept

The SMP's ability to re-create a program as it stood at any earlier time is unusual – but is nothing novel.

Honeywell, in fact, on the 1962 H 800 programs had a somewhat similar concept of "visibility" which permitted different versions of one program to be produced on request. This was in its Admiral Operating System – and it worked well for program testing.

But program testing and routine operational running are different; so are 1962 and 1974. The difference really, comes from the fact that the cost of the additional disk space used to hold the earlier programs has dropped. For the first time it is becoming economically as well as technically practical to take such precautions.

This then is a new level of quality that users can request without signing a blank check.

Once the importance of this type of quality in programming is seen, business management will be able both to utilize it and learn to demand it. As I see it, this is the real mark of the future computer application systems. Our technology, both of use and of production, is now making it practical for management – which includes the auditors, the insurance people, and the workers in the field – to demand additional quality in our product. They will want a real audit trial as well as other items.

The danger that the IBM offer of special facilities at the user end seems to be running is that we may not, for instance, have access to audit trials so that the user can check out the quality of the full system, including the parts provided by IBM.

This means that the product simply will not be up to the best available standards and the question arises if smaller, independent systems may well be able to give such quality and outperform the IBM systems.

If this is so, then the strength of IBM's marketing forces in pushing such systems will have to be regarded as being a negative force in computer technology.

Hopefully, IBM – whose marketing force is such a potent power in the field – will find some way of giving the user control over his own destiny by incorporating real quality products as well as useful, surface ones in its future plans. Otherwise it could hold us back so drastically that it could well result in the permanent loss of U.S. leadership in this field.

Letters to the Editor

The 'Odd Couple' - A Shaky Marriage?

Overhaul Needed In Universities

In the article "Education 'Inadequate' for Business DP" [CW, Nov. 6], George Glaser correctly characterized formal education and competence in the business world as "the odd couple."

While Glaser is right in saying that the educational system provides competent computer researchers, I question his initial comment about the competence of most teachers and, I add, writers on computer science subjects. I have been told by computer science department heads that the university's role is to provide theory and that it is industry's responsibility to provide practical training. I regard this as academic arrogance especially when colleges compound it by developing Ph.D's in computer science who perpetuate the teaching of subjects for which there is little practical application.

Computer science graduates who seek jobs as applications programmers or systems analysts are almost summarily unqualified and, in fact, may be less desirable to companies than graduates with business degrees. Few computer science graduates are properly prepared to deal with broad applications problems, particularly those that are people-related. Without additional heavy training in business and communications skills, they cannot function as systems analysts and their career paths to management are limited to highly technical areas.

Since systems analysis and computer programming will continue for some time to be among the fastest growing professions, colleges could provide a great service to industry by establishing degree programs at bachelors' and masters' levels which combine strong business background with working knowledge of the use of computers to solve business problems.

What is needed – and perhaps might be financed by industry – is near-vocational training for those pursuing careers in computer programming, and problem-solving, applications-oriented training for those interested in systems analysis.

Lack of this training results in the "odd couple" characterization Glaser makes. Actually, there are two major faults:

- Colleges are far too bombastic to provide computer science training on a practical level.
- Business has gotten its DP training from DP specialists who are hung up on trying to make everyone a programmer or a supertechnician.

If the bright young people who are drawn to careers in DP are to have much chance to be effective influences in business, both colleges' and businesses' attitudes must change. Programmers need to be taught an understanding and appreciation of business principles and systems and management techniques.

Businessmen need to be taught how to conceptualize uses of computers to improve their businesses. They need to learn "what" and "how" to ask for rather than "how to do it."

Perhaps the American Federation of Information Processing Societies in its role as a clearing house for information can direct some of its efforts toward helping establish guidelines that boards of higher education, colleges and industry can generally accept.

Robert S. Hoberman
Director of Education & Training
Insco Systems Corp.
Neptune, N.J.

Outrage Voiced By College Grads

We are outraged by the implications in the article "Education 'Inadequate' for Business DP."

The general tone of the article was that somehow university computer science programs are failing to prepare their students for careers in "business DP." As anyone with a familiarity with a university program should know, there is not the slightest attempt to teach "business DP" nor much interest evidenced by either faculty or students to do so.

Most universities will not even accept as transfer units any course work from community colleges which indicate data processing courses. There are sufficient private and public institutions, particularly the trade schools, which can provide the elementary amount of computer familiarity which is required in a "business DP" environment.

The university is hardly to be considered the place where serious students should have to encounter the street fighting in the world of tight budgets and onerous deadlines." In fact, an encounter with such would quickly convince the intelligent student to avoid a career which would place him in that kind of environment.

Without the university to provide the theoretical basis for advances in computer science, the sophisticated compilers, operating systems and utility packages upon which the business DP world is built could not exist. One has only to peruse the *Art of Computer Programming* series by Donald E. Knuth to understand the great difference between computer science and data processing and to see that, like any science, computer science is intended to provide models and theory for the applications world, not the applications themselves.

We feel qualified to make these comments because one of us is a recent past graduate of such a university program (five years) who has found no difficulty in obtaining interesting and financially rewarding positions with reputable software firms, and the other is a current student of such a program at University of California, Berkeley.

L. Farmer
M. Ayer
Saratoga, Calif.

Partial Answer?

I read with interest and general agreement the article about the shortcomings of college computer sciences programs in preparing graduates for life in business data processing environments. I believe that most DP professionals would concur with the viewpoints expressed by George Glaser.

"It's better to light a candle than to curse the darkness," and with this in mind, I'd like to report about the DP internship program Saab-Scania has established in cooperation with a local college.

Quinnipiac College is a small private liberal arts school located in Hamden, Conn., about 10 miles from the U.S. corporate headquarters of Saab-Scania.

Quinnipiac is fortunate in having as director of the computer sciences curriculum Assistant Professor Bruce Saulnier. In addition to his academic credentials, Professor Saulnier has also had experience in the business DP world.

When he took charge of the computer sciences program at Quinnipiac, he realized that one thing the course of study lacked was practical experience in a "real" DP environment. He set out to remedy this, insofar as possible.

Quinnipiac and Saab-Scania set up a program whereby seniors in the computer sciences program could work for a certain number of hours per semester as "interns," or trainees, at Saab. While on the "job," the trainees function as Saab employees, keeping the same hours and following the same rules as regular employees. The students are not paid, but work for credit as they would in a laboratory class at school. They work 10 or 15 hours a week.

When the trainees begin, they perform all the same duties as would a recently hired trainee computer operator. They decollate forms, run the sorter, decollator and burster, deliver reports to users and even help to keep the forms stockroom in order.

(Continued on Page 14)

The day the Zuccini family picked up their rental van.

It might have been the programmer's fault, or maybe an imperceptible scratch on the disk surface. The fact remains, it doesn't take much to produce a computer error that really hurts.

What you need is a way to cut your possibility of error to a minimum. And the best time to start is the next time you order a disk pack. Just specify BASF.

Take our 1236, for example. It's a twelve-high disk pack that's IBM 3336 compatible. We've taken special pains to make the 1236 exceed industry standards. The point is, it's better than you really need, because there could be times when you need it. Like our special binding agent... it not only bonds the magnetic coating to the aluminum disk, it also seals the surface of the disk to prevent oxidation, so you can be sure the coating won't peel or flake off.

We've discarded conventional coating and polishing methods, and developed our own... an exclusive process that creates a surface so flat, that the possibility of a head crash being caused by uneven disks is completely eliminated.

And we use screw-in weights to insure that our disk packs are balanced for keeps.

One more point. Our 1236 costs no more than other twelve-high disks. You're already paying for BASF quality... you might as well have it. For more information on the 1236 or other BASF disk packs or cartridges, write to BASF Systems, Crosby Drive, Bedford, Mass. 01730.

When it's BASF...you know it's not the disk that goofed.

Cooperative Program May Be Partial Answer

(Continued from Page 12)

They also help with clerical functions and spend some time in logging inputs and in data entry operations.

As time passes, they become involved in computer operations, at first under close supervision, and later, on their own.

This is a situation where everybody wins. The students get a long, hard look at the real world of DP; the college feels that the students get invaluable practical experience; and Saab acquires some really top-class help. In addition, we are collecting some very good resumes for later recruiting.

To date about 10 students have been assigned to Saab and all have enjoyed the experience, saying it will certainly help them in their later DP careers. Not one has indicated that the experience has decided him against a DP career and several graduates have begun those careers.

Since its inception at Saab, the program has grown so that now three other computer centers in the New Haven area also are participating.

On the basis of our experience, we highly recommend that other business establishments try to work out this sort of arrangement with their local colleges. It may prove a partial answer to the problem described by Glaser.

Martin R. Doyle
DP Manager
Saab-Scania of America, Inc.
Orange, Conn.

Faculty the Problem

Regarding the Nov. 6 article entitled "Education 'Inadequate' for Business DP," I concur wholeheartedly. A computer science education is not, by itself, an adequate background for the business DP environment.

Recognizing that fact here at California State Polytechnic University, Pomona, we started, in 1968, a bachelor of science degree program in business data processing. Since that time, we have graduated approximately 70 students per year. Their background includes not only a firm foundation in computing but also a broad background in business.

George Glaser's charge that computer science faculty often lack real world experience with business DP is largely true. It has been a difficult task to build a department of 10 full-time faculty members, all of whom have real business DP experience in addition to the academic credentials needed.

In respect to Glaser's comment about the difficulty of moving "freely between the academic environment and the industry environment," I wonder what the experiences of other universities have been in this regard. We have had only limited success in moving faculty members back into industry for refreshment of experiences.

Ronald W. Eaves
Chairman
Data Processing Department
California State Polytechnic University
Pomona, Calif.

The Perfect Solution?

It was interesting to see George Glaser tell the Educom conference that business data processing education is lousy.

Over the past six years I have talked to at least 20 educators at universities, colleges and junior colleges about their study programs for computer science. I've tried to tell them the same thing but to no avail.

Of course I solved the problem my own way. Since I employ some 30 analysts and programmers, I absolutely refuse to hire computer science graduates. I'd rather have accountants and engineers.

Frank A. Mleko
Director of Computer Services
Signode Corp.
Chicago, Ill.

Set Limits Before Starting CPE Work, ACM Told

By Don Leavitt
of the CW Staff

SAN DIEGO – Computer performance is not merely a technological problem but an integral part of installation management. Therefore, setting and using control limits on performance is a necessary function of management, according to Dr. Thomas E. Bell.

Conducting a computer performance evaluation (CPE) tutorial at the recent ACM '74 conference, the senior staff engineer from TRW Systems Group noted that failure to exercise consistent, responsible control "would be reason for dismissal in normal industrial situations."

But, he added, "similar failure in computer center management is irrationally condoned," even though it leads to the same results as the more conventional failure – "excessive costs and bad service."

The solution in the computer case is the same as in the production case, Bell said: "Determine the normal limits of variability and expected change; take corrective action when the monitored variable(s) exceed the limits."

Earlier in his presentation, Bell spelled out approaches to performance measurement and evaluation that might seem reasonable to the naive but concerned manager but which fail because they do not provide a framework by which people would spend all that money on a measurement tool?") and then the analysts wonder what to do with all the data ("That's not precisely what we had expected,' they say"). In any case, without prior planning, the result is consistently bad – expensive and ineffective, the engineer noted.

Only somewhat better is an approach based on hypotheses generated from pre-existing data, he said. Carefully reviewing specific elements within the system, understanding the system and analyzing the operation have "repeatedly led people with poorly performing systems to happier results," he admitted.

"Managements have been able to initiate improvement efforts in response to obvious, severe problems and end the effort with a clearly improved situation.

"Of course," Bell added, "satisfaction gradually decreases as the situation changes and the answers from the improvement effort become inappropriate." But "eventually the situation is so bad another effort is initiated . . ."

That procedure is "closely analogous to an industrial one in which a production process is allowed to degrade so badly that the product is unacceptable. Only then does management begin corrective action," Bell told his audience.

Instead, he said, management has to decide what is acceptable in whatever is being measured. Then "appropriate, measured action can be instituted to correct minor problems inexpensively," before they become costly to fix and "perhaps cause dysfunctional responsive actions by people uninformed about the totality of the problem."

Desperate Measures

If minor corrective actions fail to bring the computer performance back into control – "within the acceptable limits" – then, and only then, should more drastic action be taken, Bell warned.

As an example, he noted, from review of past performance and knowledge of planned workloads, job submission rates might be expected to rise at a given installation. Management should use whatever technique it wishes to indicate the deviation from the expected that is accepted before corrective action is mandated.

Actions might be taken to raise internal charge rates or order a reduction in new system development if submissions rise too sharply, he said. The fact is, he went on, "failure to set expected computer usage and control dooms management to excessive debates about what went wrong and to excessive computer costs."

Several variables can be monitored in this manner so that corrective action isn't dependent on recognizing a change in one aspect of the operation, while disregarding degradations in other areas. Perhaps even more useful, Bell thought, would be the setting of two levels of control on either side of expected behavior.

More than that, he suggested, a study of why the change is taking place might be useful. If it can be traced back to "simple randomness or some explainable and non-repeating condition," no corrective action should be taken.

Performance improvement efforts constitute the response to severe problems, Bell said, a response that may be expensive but one that is justified because of the severity of the problem.

Random Notes

Network Supports Plotter At Remote User Locations

ANN ARBOR, Mich. – The Cyphernetics Corp. remote computing network has introduced software support for the Hewlett-Packard 7202 on-line plotter. Installed at a user site and linked to the network, the HP7202 produces plots up to 10 in. by 15 in.," a source said.

Citing data such as production and inventory figures, forecasts and trend lines as "typical" of what can be done with the 7202, Cynernetics noted that pens are available in several colors and are interchangeable to produce multicolor plots. No programming skills are needed to utilize this new plotting capability, the network said from 175 Jackson Plaza, 48106.

The Plot Deepens on 'Cue'

SUNNYVALE, Calif. – The plotter option for Boole & Babbage's Configuration Utilization Evaluator (CUE) package has been enhanced to plot VS paging measures over time.

In addition to conventional CPU, channel and devices measures, the option now shows such things as number of page-ins, page-outs and page-reclaims and the average number of page I/Os per second.

The option sells for $2,000 in addition to the basic cost of CUE, a spokesman noted from 850 Stewart Dr., 94086.

Univac 1108, Cosmic Program Plot Project's Critical Paths

ATHENS, Ga. – The critial path method program, COS-02390, now available from the Cosmic clearinghouse, was developed to assist in the planning and management of a project where interrelationships between activities and functional areas are numerous and involved.

Other operations in which this Univac-1108-oriented program would be effective, Cosmic suggested, are those in which the responsibilities for various phases are fragmented or widely spread, or in cases where the project is so large or complex it is hard to visualize as a whole.

The program assists in project management by applying a systems approach to the planning, scheduling and control of an organization's project objectives, resources and plans.

Critical pathing is based on a network structure – essentially an advanced form of a flow diagram, Cosmic said – with the network made up of two basic components: activities and events.

Activities are physical or mental work to be accomplished; these make up the project time or life span and are seen in a network as arrows between events. Phrased another way, events are connection points between activities, marking their beginning and ending.

Events appear in a network diagram as nodes or junctions at which activity arrows converge or diverge. With the development of the project plan, the network then displays in a graphic way the sequential and parallel relationships between lines of work, by the arrangement of the activity arrows.

This critical path package runs on the Univac 1108 under Exec 8. It is largely Fortran V, but approximately 10% of the code is in Assembler language. The entire program is contained on "approximately 11,366" card images, Cosmic noted.

The COS-02390 coding can be purchased for $1,500. Documentation is contained in five volumes for an additional cost of $65.

Cosmic, organized as an agency to encourage the distribution of government-developed software to all interested users, is located at 112 Barrow Hall on the University of Georgia campus here.

'RXVP' Exercises Fortran Code

SANTA BARBARA, Calif. – RXVP, an automated software analysis and testing support system for use with Fortran programs, is now available from the Program Validation Project, General Research Corp., on a dial-up (remote batch) or in-house lease basis. Or, the company noted, testing can be provided by project personnel.

RXVP is used to analyze the structure of Fortran programs, regardless of size. The analysis provides the user with help in devising test data to exercise all program segments and all possible branch decisions, a spokesman claimed.

Reports of what paths have been exercised, what happened in those paths and which paths have been neither tested nor analyzed are also provided, he added.

The system supports a static analysis of the user's program code, a feature not available in most Fortran compilers, according to General Research. Part of the static analysis is an intermodule check-out.

A "detailed command language" is said to be a major part of RXVP, supporting user control and selection of the system's automatic operations. Size of user program apparently is essentially irrelevant to the RXVP logic: "It makes little difference whether the program to be tested has 50 lines of code or 50,000," one project leader said.

RXVP runs on a Control Data Corp. CDC 6000 in 20K to 35K (decimal) words of main storage. The package can be leased for in-house use for $2,000/mo plus an installation charge. Cost of system use through dial-up lines to General Research is negotiable, the company said from 5383 Hollister Ave., P.O. Box 3587, 93105.

DYL-260 Report Writer Gains Subroutine Links, Isam Support

LOS ANGELES, Calif. – Dylakor Computer Systems, Inc. has released an enhanced version of its DYL-260 report compositing/writing system which, the vendor claimed, has major advantages over the original package.

Version 2.0 includes a user exit facility – triggered by an ENTER LINKAGE command – allowing the utilization of stored subroutines, file handlers or full programs written in Cobol, BAL or Fortran, as part of the DYL-260-oriented base program.

A PERFORM command is now part of the package, supporting operations comparable to the PERFORM verb in Cobol. Backing for indexed sequential (Isam) files has been extended to handle random retrievals and updating-in-place, the company noted.

The file management portion of DYL-260 has been extended to support as many as four input and four output files and produce a report in a single pass. Previously the system could support only two files in and two out along with the report, a spokesman explained.

Support for the IBM 3340 disk system, including the self-contained 3348 data module, has been added to DYL-260 with the 2.0 version, the company said.

An optional, extra cost ($18/mo) sort feature is now available, allowing users to tie back to IBM sort logic from DYL-260 without having to modify or relearn a new set of control parameters.

Version 2.0 is said to be completely compatible with the original DYL-260 and is available for a monthly rental of $80.60 from Dylakor at 2222 Corinth Ave., 90064.

Abend Data Defined In English by 'Abip'

ANAHEIM, Calif. – Debugging erratic program runs in a OS/VS1 environment is made simpler, Pilkerton International claimed, through the use of its Abend Dump Improvement Program (Abip) which turns much of what would normally be hexadecimal data in an Abend dump into meaningful information.

The "translations" done by Abip report such things as block size and logical record length of involved files. BLKSIZE=800, LRECL=80 and RECFM=FB, for example, are shown for each data set, and the numbers are in decimals so they relate directly to the program and JCL.

Control blocks are printed with both hex and decimal offsets so the necessary information can be found with ease, Pilkerton explained. Key locations in the control blocks are "translated" if an abnormal condition existed at the time of the dump.

If there was an I/O error, a spokesman said, the sense bits are printed.

Abip is available for $195 from Pilkerton at P.O. Box 6372, 92806.

Comnet Extends Services

WASHINGTON, D.C. – Users with no equipment beyond a Hazeltine 2000 CRT terminal can utilize the On-Site Financial Services – covering general ledger and financial reporting – now being supported on the Computer Network Corp. (Comnet) network.

The new service is said to have been established for organizations with "large amounts of data, short schedules, small budgets and minimal technical expertise." It combines on-line interactive data entry and delayed batch processing of reports, the vendor explained.

The on-line data entry facilities follow a "fill-in-the-blanks" philosophy so user personnel without technical training or experience can submit data as it becomes available during the day. Transactions remain in the buffered terminal until the clerk releases them to be posted to the user files at Comnet's dual IBM 360/65 computer center, a spokesman noted.

The entry formats are tailored to the user's needs rather than following a predefined set of demands. Likewise, the user determines which of several possible reports are to be generated; the options include budget analysis, expense report interpretation and income statement comparisons.

The network also supports accounts payable, receivables, payroll and fixed asset accounting services utilizing the preformatted CRT screen concept for data entry.

The On-Site Financial Services are priced to be competitive with batch processing from local service centers, the spokesman claimed.

There are no storage or CPU charges.

Once an initial $100 installation charge has been paid, cost is based solely on connect time, transactions processed and reports prepared, the network said from 5185 MacArthur Blvd., 20018.

Sysgen Made Simple — Part 3

Concepts Also Ease Post-Generation Modifications

Prior articles in this series have covered the basic concepts of an operating system generation and some of the special coding the authors developed to generalize the SYSGEN operation.

In this article, the last of the series, the role of a proprietary library package and more details of the user coding.

By Robert T. Alexander,
James M. Blackford and Fred Schuff
Special to Computerworld

A final consideration was that Panvalet [from Pansophic Systems, Inc.] was used to store the master decks. Panvalet allows for records of 80 characters with addltonal sequence field information. This allowed us to create 78- to 80-character records with sequence numbers.

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Concepts and Techniques

lation of fixes (PTFs), modifications, program products and software packages that were supported as part of the operating system by the systems programming staff. A second complete job stream master deck was created for the post-SYSGEN modifications to the vanilla operating system.

For the post-Syagen master deck there was a new set of standard parameters but the methods and techniques were identical. Most of the parameters were to indicata the inclusion or exclusion of the various individual components.

The following list is the set of parameters that was created to provide for installation of components of our system in a post-SYSGEN environment and with the idea of compatibility to the SYSGEN parameter set.

NDX – Prefix for data set names (if other than "SYS1," allocate the data set).

N – Generated nucleus identifier (IEANUCON).

SYSTEM – System identification. Used to select data that is dependent upon the system (mainframe or alternate nuclei).

OLDVL – Volume serial number of volume containing data to be used for components (such as Hasp source on "DISK").

TARGT – Volume serial number of "target" volume.

WRKVL – Volume serial number of volums to use as work space.

ID – Generated deck identification (columns 73 to 76).

HOLD – Work value used in post-SYSGEN.

V – Linkage editor option to use local front end to time-stamp jobs.

10SUP – To force IEHIOSUP to be run against the "target" SYS1.SVCLIB.

A number of components can be included or excluded. These range from Hasp, ISA, SM-1 and Cobol through PAN, FDR, Smaint, CICS, CAS and Utils. Others in this in-or-out group include BBPCD, Procs, SVC, Spit, PTPS, Mods, TSO, CPCS and ASMH.

The development of the post-SYSGEN procedure provided several xxtra benefits:

- The single source document for all modifications insured the creation of a standardized implementation technique.
- The document provided both the installation technique for all components and the post-installation modifications that had been made.
- The facility for installation of most software components in a "test mode" was provided. That is, supplemental libraries would automatically be created for a period of testing before the final production implementation was made.

It was also found that the post-SYSGEN procedure was very compatible with the VS SYSGEN. With minor modifications, the master deck could be modified for the VS installation.

The execution of the assembly for either the SYSGEN or post-SYSGEN procdure is very straightforward. The output of the assembly is the job stream data set on SYSPUNCH.

These records can be physaically punched into cards or stored on tape or disk data sets. The intent of the procedure was to store the job stream on a DASD device and use IEBEDIT to submit the jobs.

For a complete copy of the user macros (P, SETP, PEDIT), SYSGEN master deck, post-SYSGEN master deck and job stream reformatting program, send a 9-track minireel (100 ft, 1,600 bit/in.) to any of the authors.

The authors worked together at National Bank of Detroit and Alexander is still there. Blackford is now with Xerox Corp. in Rochester, N.Y. and Schuff is with Coastal States Gas Corp. in Houston.

Sysgen Made Simple — Part 3

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Bits & Pieces

Bell & Howell Mark Reader Uses 8K Microprocessor

CHICAGO – Bell & Howell's intelligent mark reader can read pencil-marked, key-punched or preprinted cards separately or together.

Called the IMR, the device uses an 8K Intel 8008 microprocessor, 4K of which is user-programmable random-access memory (RAM), and can edit, sort and format locally gathered data under the control of its stored program.

The 300 card/min reader has dual read heads and is able to read with or without timing marks, the company said.

Transmitting at speeds up to 2,400 bit/sec asynchronously, the device has been interfaced to the Honeywell 3200 and Datanet, the Data General Nova 2 and 1200 series, the IBM 370 and Burroughs B3500.

The IMR costs $5,200 from the company's Business Equipment Group at 6800 McCormick Road, 60645.

Desk Mounted Mag Stripe Encoder Set for Credit Cards

ST. LOUIS – Elcom Industries' desk-mounted magnetic stripe encoder can encode data on the magnetic stripe on a credit card's reverse side in accordance with Ansi Standard X4.16-1973 and American Bankers Association specifications.

The company's A1E encoder costs $1,950 and its A40ER encoder reader costs $3,250 from the company at 10277 Bach Blvd., 63132.

Inforex Raises Prices On Basic Keystation, Maintenance

BURLINGTON, Mass. – Rental and maintenance prices for inforex's basic data entry keystation, the Model 2901, as well as the Model 1301 and 1302 control units were raised between 7.5% and 8.8% recently. Purchase prices on these units were raised between 4.8% and 9.3%.

The price of an average system to overseas distributors will rise by an average of 9%, the company said.

Iomec Boosts Prices

SANTA CLARA, Calif. – Iomec Inc., has boosted the price of its printers and cartridge disk drive products by 8% to 12%.

The hike brings the cost of Iomec's Model 202 printer to $8,350, and the Series 3000 cartridge disk drive now sells for $4,205.

Datapoint Diskettes in Canada

SCARBOROUGH, Ont. – Datapoint's IBM-compatible diskette memory systems are now available in Canada, according to the company's distributor there, TRW Canada Ltd.

Two 370/155s Instead of 158

User Upgrades Utilization, Not CPU

By Patrick Ward
of the CW Staff

CHICAGO – The financial benefit of the most efficient and economical use of a center's hardware can be less important than the ability of excess capacity to carry a DP operation through peak periods, backlogs from machine failures and unexpected problems generally.

Such was the case at Continental Assurance Co. (CAC) which a year ago began realizing performance gains on its two IBM 370/155s that made it consider selling one of the 155s and doing all the work on a single machine. Instead, a "single system study" led the company on a journey that took it from two 370/155s in 1973 to . . . two 370/155s a year later.

The company's data center handles an average of 500 job/day over a five and a half day week. About half of these are testing jobs.

CAC's data center does all of the insurance company's batch applications, and runs a teleprocessing system that handles about 12,000 inquiry/day.

CAC had begun noticing better and better utilization of its two 1M byte 370/155s in the first half of 1973.

It owned one of the 155s and leased the other from IBM.

The company was operating at about 50% CPU utilization, and with an IBM 370/158 on order, decided to form a team to study the possibility of exchanging the 155s for a single 158. However, the economics of that possibility did not work out, Jugle said.

"It's possible to go out into the marketplace today, pick up two 155s with 2M bytes each, and they'll be cheaper than a single 2M-byte 158." And the 158 can't match the two 155s, provided the user doesn't want VS, Jugle argued.

Instead CAC decided to enhance the 155 it owned by installing 2M bytes of Control Data's AMS memory and selling the earlier core boxes. Eventually, the firm replaced its leased 155 with a purchased one at substantial savings, Jugle noted.

The company's single system study team included representatives from hardware, scheduling, systems programming and the user areas.

Its final report showed that "if everything were operating beautifully, we could probably make it" on a single machine, Jugle said, but because of peak loads and other barriers to dependence on a highly utilized single system, the committee couldn't recommend that course.

The committee had surveyed 15 to 20 people in managerial and supervisory roles and found that "attitude" was one of several barriers to a single system.

Some programmers and users suspected that the move to a single system would affect their schedules and cause occasional delays, Jugle mentioned.

The feeling that often surfaced was, "if we do it, it's going to hurt me, and if it's going to hurt me then don't do it," he said.

Other barriers the report mentioned centered around the limited flexibility of a highly utilized single system, for example:

"User needs and expectations are unknown. We are called on to provide a continuing level of service to all facets of

(Continued on Page 25)

Resolved: Never Move at Year-End

CHICAGO – The unexpected difficulties that came up in a year-end move of Continental Assurance Co.'s data center was one factor that turned the single system study team against dependence on one machine, recalled Peter Jugle, manager of configuration planning and research for the firm.

The move itself went well, he said, but "the most damaging problem was the excessive number of projects with Jan. 1 installation dates" – to be handled in an unfamiliar environment where the air conditioning didn't work right.

The results of the move "played up just how tight we would be if we ever had a problem," Jugle said. "You just couldn't afford being out for half a day on your single system or you'd be in a real mess," he and the committee agreed.

BST Interfaces Memorex Disks To IBM System/3 Mainframes

ORANGE, Calif. – A plug-compatible disk drive for IBM System/3 computers is now available from Business Systems Technology, Inc. (BST). Called the BST/45, the drive and controller are said to exceed performance of the IBM 5445 at a lower cost, while offering a capacity for up to four disk drives for both models 10 and 15.

For a typical user with two drives and one controller, the BST/45 will save over $4,000 annually in basic rental or lease costs, the company claimed.

The BST/45 uses an electrical voice coil mechanism for head positioning rather than a hydraulic system. This gives both faster access times and improved reliability as the head actuator mechanism contains only three moving parts versus over 30 in the IBM hydraulic system, BST said.

Average head movement time for the BST/45 is 35 msec compared with 60 msec for the 5440. Head movement time over all tracks is 60 msec for BST, versus IBM's 130 msec, BST said. Combining this with a start-up and stop time only half that of IBM's, the BST/45 offers a processing throughput increase, the company added.

The BST/45 is said to be completely compatible with existing System/3 user software, permitting programs to run without modification. Total interchangeability exists between disk packs written on the IBM 5445 and the BST/45, the company said.

The BST/45 controller is priced at $440/mo, while the drives cost $320/mo on a one-year lease including maintenance. The firm is at 1215 W. Katella Ave., 92667.

NCR Rent, Maintenance Rates Up

DAYTON, Ohio – NCR is raising rental and maintenance charges on most of its Century computer systems.

The rental increases range from 1% to 8%. Century 50 rental charges, for example, will increase 6% and Century 101 charges 8%, while the larger 200 and 201 models will increase only 2% and 1% respectively.

For new customers the rental increases will become effective Dec. 1.

At the same time, NCR is granting unlimited system usage to Century rental customers effective immediately. Previously, usage over 200 hour/mo was subject to a surcharge.

Also, the company is making reductions from 9% to 15% in the purchase prices of certain Century models to achieve a higher percentage of sales versus rental ratio.

Purchase prices on four computer models, the 50, 100, 200 and 201, remain unchanged.

Maintenance charges will increase 8% to 9% on all Century computers except the 151, 251 and 300. Maintenance for 151 will cost 1% more and the rates for the 251 and 300 remain unchanged.

The maintenance increases will become effective Dec. 31 for purchase customers and next March 1 for all rental customers.

Tapes Need Extra Protection in Winter

NEW YORK — Fire hazards tend to increase in the winter months so now is a good time to make a safety check of computer tapes and microfilm, according to one expert in the field.

Emanuel Kandel, vice-president for storage of Bonded Services, a tape storage firm, suggested companies review their storage facilities periodically to make sure data banks are safe from fire, explosion, magnetic fields, vandalism, environmental deterioration theft and other dangers.

To help users determine if their current storage facilities are adequate, Kandel has developed a checklist:

- Are tapes and microfilms stored in an engineered, environment-controlled building where optimal temperature and humidity are maintained?
- Is the building isolated, self-contained and fireproof with an alarm system connected to the nearest firehouse?
- Are tapes safe from magnetic fields?
- Are records stored in a building that does not have gas pipes? (They can leak, causing an explosion such as the one that destroyed a 26-story building on New York's Second Ave. this past April.)
- Does the building where you store your records provide 24-hour protection against vandalism and theft?
- Does your storage facility have a regular inspection and maintenance program to make sure all equipment is functioning properly?
- Are all the people who handle your storage media bonded, well-trained and experienced?
- If you now store computer tapes and microfilm on your own premises, can you use the high-rent space to better advantage?

Bonded Services' main tape storage facility houses more than four million reels of tape and film in 16 separate buildings.

Through a retrieval system, Bonded Services records in-and-out activity and can provide a storage history of any reel including its location, how often it is removed from and returned to storage, where it was sent, when it was sent and when it was returned in a periodic computer printout of activity.

The company has facilities in New Jersey, California, Canada, Holland, Mexico and Hong Kong and is headquartered at 733 Third Ave. 10017.

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Made for all computer users, this gold-finished plaster sculpture symbolizes the DP professional's computer fixation. Six inches long, the paperweight is priced at $5.95 from Brian Productions, Department B, P.O. Box 101, Dayton, Ohio 45402.

User Ups Utilization, Not CPU

(Continued from Page 23)

the company, when the company itself hopes to be dynamic.

"The demands of the company are not known, yet we must allow for a certain amount of dynamic development by allowing for a certain amount of flexibility. How much? How far out should our plans go when the company plans are not firm?

"While we cannot afford to provide for every alternative, neither can we afford to be an obstacle to progress," the report said.

But in the area of tape drives, the company had achieved some substantial success.

Data center management had decided "that perhaps they were a bit equipment rich" and wanted to see if they could cut back from over 40 tape drives.

The first cut was to simply limit usage to 32 drives; the next step was down to 28, then to 24 and finally to 20.

Tape drive utilization went from about "25% allotted time to about 55% allotted time," Jugle said.

Part II explains the other barriers that CAC saw against reliance on a single computer system and follows the company's course to a similar but less expensive computer configuration.

Dimensional Cuts Add-On Prices

LAKE SUCCESS, N.Y. — Dimensional Systems, Inc. has cut prices for its add-on memories for the Digital Equipment Corp. Decsystem-10 and PDP-15 minicomputer by 15% and 30% respectively.

At British Airways

Internal Phone Numbers Kept Current

LONDON – Inaccurate internal telephone directories can cause delay and frustration to users. Yet to keep pace with amendments and to produce new issues in an organization of any size is often an expensive and laborious task.

A system designed by the Management Services Department of the Overseas Division of British Airways solved these problems for the airline. Bulky directories which once took eight to 10 weeks to produce are now available in 14 days. Printing costs have been halved, and indexing and recording of amendments for inclusion in the next issue have been simplified.

The directory concerned, which is about 1/2-in. thick, is prepared in two sections. The first is divided by department and gives the name, title and extension number of every person (including secretaries) who works in each department. The second section is a straight alphabetical listing, cross-reference to the first.

Production of the directory begins with the typing of the departmental section on a series of partly filled master sheets. This work is done on an IBM Selectric typewriter whose head prints a small bar code equivalent beneath each alphabetic or numeric character.

Copies of the master sheets are given to the telephone clerks who are responsible for updating. New entries are written at the foot of the form.

When a new directory is to be issued, the master sheets are called in and the amendments typed in. The sheets are then put through Datatype optical mark reader (an American machine marketed in the UK by British Airways) which is on-line to a Data General Nova 1220 minicomputer.

Using software written by British Airways, the Nova 1220 prepares this raw material for typesetting. Amendments are put into correct sequence in the departmental lists and all entries are sorted into alphabetical order and cross-references inserted. During these processes, the computer program also interpolates instruction codes, including pagination for photocomposition.

Output from the minicomputer is a punched paper tape. This is sent to an outside printer who uses it without modification as input to a Compstar phototypesetter.

'SEDM' Simulates Sonar Systems

SYRACUSE, N.Y. – Minicomputers are helping engineers here simulate and test new concepts in the design of sonar systems.

The Sonar Evaluation Demonstration Model (SEDM), developed by General Electric Co.'s Electronic Systems Division, enables designers to test new methods for detecting, identifying and tracking targets, evaluate new ways to process and display sonar data.

The SEDM system is governed by Varian's Omnitask Real-Time Executive that allows task priority-level mixing and derives 65% of its subsystem support from one V73 and three Series 620 minicomputers.

Miniworld

Qantel Adds Two Line Printers

HAYWARD, Calif. – Qantel Corp. has added two printers for its business computers and communications systems.

The printing mechanism in the Model 4301 printing terminal and Model 4341 auxiliary character printer is said to be able to produce a typewriter-like original and up to 11 copies at an average rate of 45 char./sec. Interchangeable character elements are available.

The printer can also be obtained as the Model 4321 video printer.

The Model 4301 printing terminal is priced at $5,950, while the Model 4321 video printer and Model 4341 auxiliary character printer are both priced at $5,650. Qantel is at 3525 Breakwater Ave., 94545.

Units Process Dispersed Data

CARSON, Calif. – Microtech Data Systems, Inc. has announced two intelligent terminals for dispersed data processing applications.

The Model 8/640 includes a CRT, standard typewriter keyboard with 10-key numeric pad, twin digital cassettes, processor and memory capacity of 8K to 16K bytes. The memory can be in combinations of read-only memory (ROM), programmable read-only memory (Prom) or random-access memory (RAM), the firm stated.

The larger 8/640 II contains up to 65K bytes of memory and can support floppy and fixed-head disks, character and line printers and 3M cartridge and 7- to 9-track magnetic tape units.

The 8/640 II supports both asynchronous and synchronous communications, with the latter up to 9,600 bit/sec.

Both terminals use Microtext, described by a company spokesman as a compiler with a data entry language.

The 8/640 costs $4,875 and the 8/640 II is priced at $5,787 from Microtech at 1141 E. Janis St., 90746.

Controller Handles 4 Floppy Disks

MOUNTAIN VIEW, Calif. – The Minicomputer Technology FDC102 floppy disk controller interfaces a Data General Nova or Digital Computer Controls D-116 to up to four floppy disk drives.

Drives supported include the California Computer Products 140, Innovex 220, Orbis 74B and Shugart SA901.

Single Control Data 9400 and Memorex 651 drives are also supported. The firm's hard sector format allows over 342K bytes of usable data per drive for a maximum on-line storage capacity of over 1.3M bytes. The controller comes complete with interrupt and noninterrupt drivers, a disk formatter program and a diagnostic program. Other software is also available, the firm said.

The controller uses the DMA data channel of the Nova and features bootstrap load capability, automatic head unloading for increased media life and a user-selected device address. The controller also remembers if a disk has been removed and another disk inserted in an unselected drive, the firm added.

The controller is priced at $950 from the firm at 1901 Old Middlefield Way, 94043.

AED Offers Disk for PDP -11

SUNNYVALE, Calif. – A cartridge disk system from Advanced Electronics Design, Inc. (AED) is compatible with Digital Equipment Corp.'s (DEC) PDP-11 minicomputers.

All AED 2200 hardware, software and media are said to be directly interchangeable with DEC's RK-11, RK-05 and RK-03 systems.

The 2200 controller plugs directly onto the PDP-11 Unibus and all controller electronics are mounted on a single board.

The Diablo disk drives used in the system are available in several variations with removable and fixed cartridges. The controller can operate up to four disk drives in any combination.

Price of a basic 2200 system, with a single spindle drive, removable cartridge and necessary connecting hardware is under $6,000 from AED at 754 N. Pastoria St., 94086.

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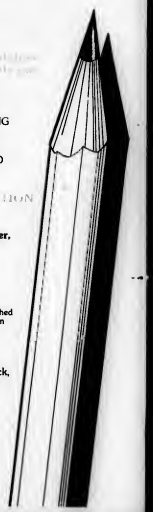

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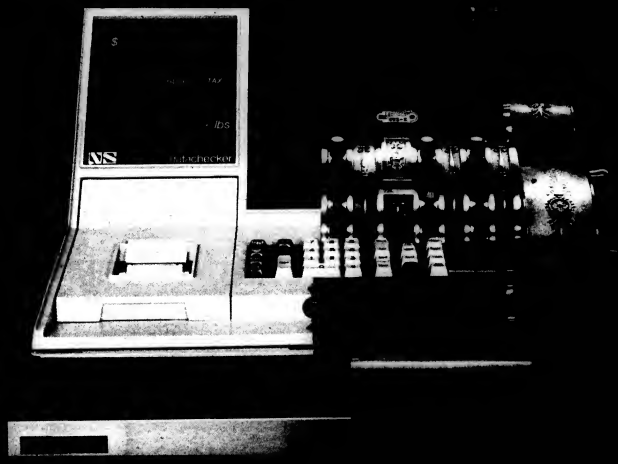
Computers in Retailing

A Computerworld Special Report
November 27, 1974



Retailers Have Come a Long Way From the Cigar Box

By Toni Wiseman
Of the CW Staff

Retailers have come a long way from cigar boxes to computers. It is no longer sufficient for a store manager to know where his cash is kept; he needs information on scheduling cashiers, controlling inventory, monitoring stock or cash shortages, spotting trends and ordering and receiving goods.

The cigar box used to be the beart of a retailer's system, but now more and more stores are turning to cigar boxes with computer equipment attached. Progressive stores are installing this gear at the point-of-sale (POS) rather than in some distant computer center.

Now a cashier rings up a sale and, at the same time the cash register drawer opens, a small computer under the counter may be warning of an impending shortage of certain items or telling the operator that he has keyed in the wrong total for an item bought by the shopper.

It has been estimated by International Data Corp., a market research company, that almost half of the large department store chains now have installed this sophisticated POS equipment.

While almost three million cash registers are still in use throughout the U.S., since 1971 mechanical registers have slowly been supplanted by POS terminals, with some 50,000 already installed in general merchandise stores.

It is estimated that by 1980 one cash register in five will be a POS terminal.

Chains with fewer than five stores are having difficulty cost-justifying this equipment; the cash registers (those with computer equipment or which communicate with a computer are called POS terminals) are not so expensive, but the computer itself is.

A computer can handle transactions on scores of POS terminals, but if a chain only needs three or five such registers/ terminals then there is difficulty in citing cost benefits.

Feasibility

Though operating a POS terminal is slightly more complicated than ringing up a sale on an old-fashioned cash register, it is really no more difficult than filling out the modern sales slips with their innumerable boxes and codes.

In most cases, the terminal "coaches" the salesperson throughout the entire transaction, checking the validity of his entries before permitting further data to be entered. Incorrect data is rejected and the salesperson instructed to start again.

POS units can operate not only on the sales floor but also on the shipping dock, the warehouse floor and in business' back office.

In the office, for instance, the units can read merchandise tags, enter basic data such as payroll information for later processing or read information from accounting documents such as purchase orders or invoices.

Even in a large department store with an extant DP department, the change from old cash registers to POS terminals could mean an extra cost of several hundred thousand dollars in many cases.

But balancing this out is the decrease in time clerks must spend with each transaction and the advantage of quick billing time, instant credit checks and the reduction in bad receivables.

A Real Revolution?

The trend toward using this equipment is generally referred to as the "POS revolution," but this implies a mass movement toward POS equipment. In reality, it is the few chain stores with hundreds of branches or outlets that are buying up all the gear.

Prices appear too high for many single-unit or specialty stores which stock large items or big ticket items and where a salesman's time is a small percentage of the cost of the sale.

Equipment prices are decreasing, according to many sources, but estimates on when this equipment will be easily affordable by smaller stores, those with big ticket items (but with low volume sales), are sketchy.

The opinions of users and vendors on POS vary somewhat, contingent on personal experience. Some of the opinions expressed include:

- "Unless it's a major situation, a big ticket operation, a store doesn't need automated methods for merchandise control, because with a limited quantity volume it still can be hand-operated."
- "POS represents a great opportunity to reduce accounting errors and errors originating from human or manual input."
- "The future of retailing lies in the use of computers, and specifically in the area of POS systems."
- "Even for the small store there is justification [for POS] but with limitations. A store can go to POS today if it's going out to buy a register. If it already has registers it doesn't really pay to change over unless it can classify and get its merchandise completely identified.

"But if it's about to open up a branch store, it would pay to go out and get an NCR or Regitel or Singer terminal as a stand-alone unit and know that it's ready for the future. The price is roughly the same."

What Is It?

The first question to examine is "What is point-of-sale?"

Some view communications linkage as a POS terminal's most important function, but more and more POS systems are changing from cash register systems to integrated POS and credit authorization systems, working in conjunction with DP systems.

"What the POS revolution is really all about is the employment of advanced information-handling technology to communicate more effectively with the transaction occurring on the selling floor: to distill out of the chaos of the thousands upon thousands of transactions those particular messages you need to hear and understand right now," said Moses Shapiro, chairman of the board of General Instrument Corp.

"Data can be recaptured; a lost sale or, in some cases, a dissatisfied customer cannot," he warned.

Implementation

A POS system will give a retailer an important competitive edge, according to many people in the field, but only if it is effectively planned with the involvement of the people who will make it work.

"Stay as loose as possible and think and plan modularly" was the suggestion of one Minneapolis user.

The pitfalls of any new system are many, but all POS users agree that the main bugaboo in POS is lack of planning.

"We have yet to get all the bugs out of our system," said Lewis Marlow of F.A.O. Schwarz. "All I could suggest to anyone else would be to try and have it thoroughly organized before they start, before they make the transition from manual to computer, because it's really a pain if you don't and your paperwork just keeps piling up."

"Manufacturers are proposing POS systems to people who have no system at all at present, even manual, and as a result they're getting badly burned," said Irving I. Solomon of the National Retail Merchants Association. "In other words, those horrible stories that you hear about people pulling out registers are because they don't have any discipline over their paperwork even before they put in the registers."

A Word of Caution...

Future of POS Lies With Vendors

By Irving I. Solomon
Special to Computerworld

Undoubtedly, the first question to raise concerning point-of-sale (POS) equipment is why it has currently assumed such prominence in the retailing market.

In the first place, the manufacturers have developed a technology in the terminal field which they would like to apply to additional markets. Happily for them, much of the research and development expenditures relating to terminal technology have already been supported by other industries, most notably the banking, aerospace and air travel industries.

At the same time, the manufacturers have become sensitive to retail management's dissatisfaction with current applications. They now realize that they must offer something better or risk losing a substantial chunk of business.

But there is still evidence that the manufacturers do not understand the the basic problem of DP in retailing. The manufacturers now believe that they can solve these problems by providing five, 10 or 20 times as much data to the retailer through the use of POS – and possibly swamp him with useless data.

While the item control, at the level of the detail potentially provided by POS, appears to offer strong advantages, a word of caution is in order. POS could well lead to a repetition of the same mistakes that followed the original move of the computer into retail activity.

Key to Success

The key to s successful POS future lies in the systems area. The level of retail systems development must be increased if we are to see our expectations fulfilled.

Systems standardization is part of the answer to improvement. Standard packages and programs that are *not applications-oriented* are available from both the manufacturers of equipment and from software houses and they will be heavily utilized.

Programs for operating systems, file maintenance and retrieval systems and subroutines to handle the polling of terminals, all of which are independent of the basic application, can be of great value and result in significant savings for the retailer.

However, applications systems developed by manufacturers or software firms will have little impact on most retailers. Although there will be a market for them among the smaller stores, it is more economical for the medium- or large-size retailer to do his own applications development.

Only in this way can stores assure themselves that the systems they are developing and installing truly meet their own needs.

A year ago, retailers were interested in POS equipment that worked. Today the retailer must make his choice between buying the current model for delivery in two years or buying next year's model with new features.

Although the magnitude of change in computers themselves and in peripheral devices will generally be moderate, there is one hardware area that should undergo a dramatic change.

I refer to the emergence of the mini-computer, designed for general business applications and, in particular, for the retail industry. We have already seen one example that approaches this type of equipment: The control unit in branch stores that controls POS terminals is, in fact, a minicomputer.

With the new technology of large-scale integrated circuits bringing the price of computing power down even further, these minicomputers provide more power than their large-scale predecessors at only a fraction of the price.

The future for retail data processing can best be described by the saying, "There is no heavier burden than a great potential." This potential is far from being realized and it will be well into the late 1970s and early 1980s before the industry will see the computer performing extensively in such areas as automatic order writing, controlling stock keeping units, forecasting and even total store simulation.

Solomon is vice-president of the National Retail Merchants Association's Information Systems Division.

On the Inside

This special report was prepared by *Computerworld* staff writer Toni Wiseman.

Hampers Branch Transmission

Store Overcomes Problem of Power in Expanding POS

PITTSBURGH, Pa. – When the Kaufmann brothers, Isaac and Jacob, moved their emporium into a new two-story building in 1872, they had no idea that the family store would one day tower 14 stories and serve as the nerve center for a growing network of department stores scattered throughout Pennsylvania and Ohio.

So in September 1973, with a new branch retail outlet nearing completion in Steubenville, Ohio, Kaufmann's management made a perplexing discovery. The Unitote electromechanical point-of-sale (POS) terminals used throughout the company were no longer available.

The Steubenville store had to be equipped with all electronic terminals and that required the installation of a new minicomputer system. This presented a real problem, because all central equipment had to be housed in the downtown Pittsburgh headquarters building, a turn-of-the-century structure that was inadequately wired for the requirements of the new operation.

To add to the complexities, Kaufmann's wanted the new system customized to work with its electromechanical POS terminals as well as the new electronics terminals, and the complete system had to provide 100% backup to assure that no data would get lost.

It decided to tackle the basic problem – inadequate wiring – first.

Over the years the headquarters building had been expanded, remodeled and rewired as needs and fire codes dictated. So when the decision was made to install a minicomputer system, one of the first things William H. McChesney, Kaufmann's POS systems manager, did was check the incoming line power.

"We knew the specifications of the minicomputer and we had been cautioned by the POS terminal manufacturer about the need for stable voltage," McChesney said. "But when we put a meter on the line, we discovered, in spite of the fact that 30% of our wiring had been replaced just a few months earlier, we were experiencing a lot of power fluctuation – plus or minus 10 to 15 volts on a load condition."

The existence of line voltage fluctuation came as a surprise. Kaufmann's had not experienced any problems with its electromechanical terminal system before. Some 350 electromechanical registers in the downtown store and 400 more in branch outlets were tied into a single-wire CPU hardware system through nine solid-state store terminal data communication controllers (DCCs).

The system also included one 70K magnetic memory drum with an auxiliary insert/delete unit and a credit authorization printer that was linked to the downtown credit office as well as the POS terminals. The entire system had worked well on the existing wiring, but the proposed minicomputer system would be much more complex.

The new downtown Unitote installation was planned around two minis, both Digital Computer Controls D 116-E .32K units, in order to provide 100% backup. The two minis were to be linked electronically so both minis would always hold identical information.

The new system also called for two Unitote Modem Data Communications Adapters (MDCA) for communications control, four 1,600 bit/in. 9-track Digi-Data tape drives with read/write capability (two for storing Pittsburgh data and two for suburban input), and two Century Data System 114 disk drives.

Two ASR 33 Teletype consoles were to provide communication with the computers. Three NCR thermoprinters with insert and delete capabilities for positive and negative credit completed the system, supplemented by three backup tape units.

Under this new system the Steubenville operation would consist of 64 Unitote 302-C electronic terminals, one 24K D 116-E mini, one 1400 Digi-Data 800 bit/in. tape unit with read/write capability, one MDCA and one ASR 33 Teletype for communication.

Data from the Steubenville mini system as well as from all other branch terminals would travel by data transmission lines at 1,600 bit/sec to the central system in downtown Pittsburgh.

Prepared for Trouble

"We knew that the voltage fluctuation we were experiencing would create all kinds of problems with this new system," McChesney recalled. "For example, with fluctuating voltage you can get a spike on a receive line that looks like data. When the computer tries to store it you can get a bad data block."

Such fluctuation is not uncommon. Utility statistics show, in a typical metropolitan location with a normal mix of industrial, commercial and residential power consumers, major faults with more than a 75% voltage drop can be expected about 10 times a year.

Countless smaller fluctuations are caused routinely by start-up or shut down of common equipment or by the switching operations of other electronic equipment in the nearby area.

From past experience McChesney knew that, although power fluctuations were a serious threat to the new system, they could easily be eliminated with voltage regulators. So, from the beginning, two types of regulators made by Sola Electric Division of Sola Basic Industries were incorporated into the blueprints for the new POS system.

A 3 kVA sinusoidal constant voltage transformer (CVS) was selected to protect the two minis in the downtown operation and a 10 kVA unit would regulate the 230 V power supply for the two 114 disk drives. Another 3 kVA CVS would be installed as a buffer for the Steubenville mini.

A 3 kVA constant voltage transformer mounted on the wall to the left of the Steubenville mini acts as a buffer.

When Kaufmann Brothers installed Unitote 302-C electronic terminals in its Steubenville branch, it found it also had to install a new minicomputer system.

Although McChesney has no way of knowing how many problems and accidents the voltage regulators may have averted, one dramatic incident convinced him that the installation of voltage regulators was worthwhile.

"We have three-phase power in Steubenville," he explained. "Because of some malfunction the power company there sent power down the neutral line by mistake. The CVS recognized it and shut down the power completely.

"Such fluctuation is not uncommon. Utility statistics show major faults with more than a 75% voltage drop can be expected about 10 times a year."

"Later a power company official told me that if I hadn't had the voltage regulator it would have blown the power supply in the computer."

Once the voltage fluctuations had been eliminated, Kaufmann's turned its attention to tailoring the proposed minicomputer system to suit its needs. It preferred to keep its existing electromechanical POS terminals rather than replace them all with new electronic devices. Cost was one obvious factor, but more than that it liked the older terminals.

"The electromechanicals have a full-size keyboard," McChesney said. "There are 11 rows of keys with decimals one to nine in each row, and we've found that clerks are less apt to make a mistake with these than on a terminal with a smaller keyboard."

Special Interface

But keeping the electromechanical terminals presented another problem – figuring out how to operate them off the new mini system. Kaufmann's wanted to phase out the old wired hardware system completely, and to do this a special interface had to be created.

What resulted was a custom-designed Unitote 101 concentrator using Ecco 3-D logic. It has two card racks, each holding 12 cards. Each 5-in. by 7-in. card holds 75 IC circuits, so a single card replaces a 2-ft by 6-in. accumulator in the older hardware system.

Previously, data from all the electromechanical terminals was recorded directly into the CPU, with 16 accumulators serving as an interface between the terminals and the magnetic memory drum. In the new setup, each electromechanical terminal has a separate telephone data line connection with the central minicomputer system through the new concentrator. The system is capable of handling unlimited transmission per line.

McChesney believes this conversion is unique. "We've taken communications devices designed strictly for the transfer of POS data from store terminal to downtown central and run them into a special interface so they'll run off the minicomputer.

"I don't believe this has ever been done anywhere before," he added.

The Steubenville electronic terminals run directly into the Steubenville mini. The mini holds three different cash register programs and 4M bytes of descriptive for the detail file.

It is capable of comparing incoming data and determining what type of entry it is; information collected from each sale includes the sales clerk, register, transaction and merchandise numbers; the customer account number when a credit transaction takes place; and miscellaneous data such as tax, discount, handling charge or alteration.

In addition, the mini displays descriptives. It selects the name of the department, sends it to the terminal and prints out the name of the department on the ticket.

Self-Contained Mini

The Steubenville mini is self-contained except for credit function. Both credit authorization capability and credit update are handled at the headquarters here. When the transaction being registered is a credit purchase, the Steubenville mini sends the account number there for authorization and the mini sends the query into the disk drives.

The information is located and approval or authorization is sent back through the Pittsburgh mini to the Steubenville mini and forwarded to the querying terminal. The new system provides selective positive credit so Kaufmann's can keep a running balance on specific accounts.

All other incoming Steubenville data is stored on tape in the local mini and simultaneously sent to Pittsburgh. This data is put on tape throughout the day and at the end of each day the tape is processed on an IBM 370/135 for feedback and same-day analysis and print out, as well as billing and payroll.

Since the mini system was installed last March, Kaufmann's ran the old and new systems in tandem, but last month all electromechanical terminals were scheduled to go onto the minicomputer system using the concentrator. The wired hardware system will be removed after a 30-day trial period and the conversion will be complete.

The Dream Can Become a Nightmare

POS Advantages May Not Include Cost-Effectiveness

By Richard P. Shaffer
Special to Computerworld

It has been said that the introduction of electronic point-of-sale (POS) equipment is the retailer's dream-come-true. Unless the projected cost savings are actually achieved, however, the installation of POS devices can become a nightmare.

The cost for POS units varies between $2,000 and $5,000 each depending upon the capabilities of the device and the system configuration with which it is connected. On the average, one may expect the cost of installing POS equipment to be in the neighborhood of 5% of sales.

The annual savings (including maintenance) will be about 1% of sales. This indicates approximately a five-year payback.

While this return on investment is acceptable, it is not overwhelming in light of the alternate use of funds (opening new stores, renovating, building new warehouses). Thus management must be sure to make optimum use of all the POS capabilities in order to insure a satisfactory payback.

It is generally agreed that the POS device provides the capability to accumulate data more accurately. Merchandise tags and credit cards can be read automatically, eliminating human error. Check digits can be used on-line to detect errors in information that is automatically read as well as data entered manually through the keyboard.

In addition, the programmed instructions technique should minimize the errors of omission that occur at the register since the salesperson will be led step by step through the operating procedures.

The problem with citing accuracy as a cost justification is the difficulty in quantifying the savings. Nevertheless, accuracy represents a major intangible advantage for POS installations. It also has the tangible benefit of requiring fewer people in the back office to detect and correct errors.

Checkout 15% Faster

Tests indicate that customer checkout is probably about 15% faster utilizing POS registers with hand-held (wand) reading capabilities than it is with traditional cash registers. In addition, credit checking can be accomplished more quickly and accurately.

It is questionable whether any major savings can be attributed to greater speed in the availability of data captured at the POS. Consider the impact that more timely information has in the three traditional merchandise categories – "big ticket," fashion and staple.

For big ticket items it would be valuable to have on-line inquiry to determine the status of a customer's order or to reserve merchandise. Speed is of no value, however, in processing a customer's order for special merchandise, since it usually takes six weeks to six months for the manufacturer to deliver.

A one or two day reduction in processing time is therefore relatively insignificant in the area of big ticket.

What will speeding information processing do for the fashion merchandising problem? Here, up-to-date information can be valuable in telling the merchant when and where to transfer merchandise.

In terms of placing reorders, however, it is uncertain that speed matters since the vendor is usually unable to comply with reorder requests for short style-life fashion items.

In the staple merchandise system the precise advantage of speedier data handling is again unclear. Typically, the cycle time for the capture of sales information to the creation of a purchase order takes a week to ten days or more. The speed of transmitting the information from POS to the DP installation may cost as much as 20% out of this total cycle.

Since, however, the reorder of staple merchandise is, or should be, dependent upon lead time and statistical projection of sales based on historical data, this reduction of 20% in the data handling time will not seriously impact the reorder situation. It will, however, impact the amount of reserve stock required to cover the lead time by the same amount – approximately 20%.

Thus, the money tied up in inventory will be reduced and, therefore, some quantifiable advantage is associated with the speed of processing staple merchandise information.

Credit Checking

All too often the cost justification for POS equipment rests heavily on the credit-checking portion of the application, because this is the single largest quantifiable area of cost justification which can be identified.

There is a recognizable savings associated with zero floor limits, fewer credit frauds, reduction in bad debt and the ability to have current purchases reflected in the most recent billing cycle. Nevertheless, these items should not be used as part of the cost justification for POS since the same cost savings can be achieved through the installation of a free-standing credit check system.

In fact, in recognition of the immediate savings to be achieved through the implementation of on-line credit checking, it may be desirable to install a system.

Additional Benefits

There are some side benefits which may be included in the cost justification analysis for POS, for example:

- Reduction in operator cost due to the ability to capture additional information more quickly and accurately and yet retain the present quality of sales personnel.
- Greater security through data capture control and program lockout of certain types of transactions.
- Optimized sales force utilization based on logistics.
- Availability of big ticket item information using the on-line terminal as an inquiry device.
- Reduced need for registers due to the 15% average throughput increase.
- Reduced clerk training time.
- Reduced dollar float of the outstanding accounts receivables as a result of faster billing.
- Descriptive billing because of the system's ability to capture merchandise description.
- Coordination and control between merchandising and accounting operations resulting from tying together units and dollars.
- Data reduction.

Negative Cost

In evaluating the cost implications of POS equipment, it is also necessary to consider the cost associated with not going to POS. This refers to the lost opportunity or the inability to reap the advantages of POS by delaying the decision to install.

Naturally, if the equipment is cost-justified at all, then the sooner it is installed the sooner the reduction in total operating costs will be achieved.

But although there is a cost associated with delaying the decision to go to POS, this decision should not be hurried. The risk of making mistakes and installing equipment before being prepared to handle all the peripheral problems may cause more trouble and cost expenditure than waiting until the job could be done properly.

The peripheral systems associated with the implementation of POS should be reviewed as quickly and completely as possible, however. This includes not only the DP systems required to handle the information captured at the POS, but also the operator training manuals and floor procedures associated with this new equipment.

Shaffer is vice-president of Gambit Management Strategies, Inc., a management consulting firm.

Variations on a Theme

By Richard P. Shaffer
Special to Computerworld

Point-of-sale (POS) units can be viewed as a system containing input, process and output components. Analysis of these components suggests additional areas where the units can be employed to help the retailer and thus provide additional cost justification.

For example, the input wand coupled with an output cassette can be made portable and battery-operated. The addition of 10 digit keys enables entry of multiple quantities.

With such a device strapped over the shoulder, one could walk down the aisles of a warehouse reading the encoded merchandise tags and capturing the inventory data on tape.

Where there are multiple quantities of the same item, only a single tag need be read and the quantity keyed in. The speed and accuracy of such an inventory procedure would be part of the cost justification for the installation.

Another variation is to retain all the input, process and output capabilities but reduce their capacity, resulting in a small portable register which can be used to supplement the main register when the traffic gets heavy in a particular department.

Once this small register has exhausted its capacity (one or two transactions), the cassette on which the information is captured must be replaced or the small register must be connected to a facility where the information can be transcribed, thus freeing it up to handle one or two more transactions again. Since the transcription of captured information is accomplished at electronic speeds, it does not seriously impair the utilization of the small register.

In selling areas where sales checks must be written (i.e., commission sales or credit sales), it is possible to eliminate the printer and reduce the POS cost considerably.

Still another variation on the modular theme is to retain all the cash register input, process and output functions but to make some unique use of the merchandise identification capabilities. Since the wand-type readers can accept bar codes and even optical type characters, it is possible to print the merchandise identification on the package itself, thus eliminating the need for tags.

One drawback to this approach is the problem of price changes or markdowns, but the ability to read printed merchandise identification data could, however, be of significant advantage in the area of catalog sales where the clerk at the catalog sales desk could use the wand to read merchandise information directly out of the catalog sales book. There may also be application for this capability in the receipt, distribution and transfer of merchandise between stores, locations or to and from the warehouse.

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Bodes Ill for the Future

Food Industry DPers Have Poor Grasp of Technology

By David M. Carlson
Special to Computerworld

Several years ago a study was made of the potential of improving supermarket checkout productivity through the use of front-end optical scanning of symbols incorporated in the labels. The study showed that there was great potential and a further effort was launched to select a symbol.

In May 1973, the symbol was selected and may now be seen on many packages in the supermarkets. In fact, the vast majority of all grocery department products will carry this symbol by the end of 1975.

Given the large potential market and the selection of the final symbol, several equipment manufacturers have introduced products to scan goods and retrieve price and descriptive information. Several installations are now in operation and nearly every major metropolitan area will have scanning operations within six months.

Although the equipment is expensive, the technology is sophisticated and the industry is not known for its progressive stance; scanning operations at least on a pilot basis are a must for every food retailer caught in a productivity crisis.

Implications for Food Retailing

At present, the organizational area most often looked to for guidance in this technological revolution in retail operations is the DP department. Unfortunately, most food retailing DP departments are ill-prepared for this assignment. .

For example, many have neither staff nor managers with actual store experience. Many are still operating in the finance and accounting area with the concurrent narrow view this often implies.

Until now DP involvement in a wide range of company operations has been a profitable opportunity; now DP involvement in store operation's implementation of slot scanning is absolutely essential. Whereas hardware, software and personnel plans have provided solid foundations for efficient growth, the demands of scanning make this planning an absolute must. Therefore, many companies have a great deal of "catching-up" to do and in a very short time period.

One way in which this can be accomplished is the temporary (one- to two-year) assignment of a store manager or assistant store manager to the DP department. Or assuming there will be continued need for strong liasion between DP and store operations, some departments have created a permanent new position which has this responsibility.

These companies recognize that slot scanning is only one of many areas in which computer-related technology will impact the stores over the next several years. Other areas include electronic store ordering, on-line account balance verification and debiting and minicomputer environmental monitoring and control.

The use of an ad hoc committee or task force on a project-to-project basis may also prove extremely [illegible] as the impact of new technology spread across traditional organizational boundaries.

Another trend which has been slower to develop in retailing than many other industries involves the reporting relationship and level of the DP manager or executive. The demand for the involvement of the senior organizational DP executive at the highest decision-making level is greater than ever. Furthermore, he must train top management to make the right business decisions in a rapidly changing environment.

In summary, unless there are dramatic changes in the way many food retailers deal with new technology, the future is bleak not only for the great potential of slot scanning but also for the future careers of many DP people.

Carlson is vice-president – information systems for Chatham Super Markets, Inc., Warren, Mich.

A Curb Against Inflation

Over the past several years the number of supermarkets in the U.S. has steadily decreased. This little known fact is indicative of the move to large high-volume "discount" operations.

The single highest area of labor expense is the supermarket front end, that is, in the itemization and handling of products as they leave the store. In the last five years productivity has generally *decreased* whereas labor rates have nearly doubled.

Given this trend and net profit at .5%, an increase in front-end productivity is essential for the continued viability of the industry unless inflation is allowed to continue to run rampant in the already pressured food retailing sector.

For example, an increase of only 10% in front-end labor productivity could increase after-tax profit by 30%. However, because of competitive pressure much of these savings will not in fact find their way to the profit line but rather to lower prices which will hopefully increase volume. This is a very important point: Productivity increases will likely produce major anti-inflationary effects.

'Wired City' May Become Merchandisers' Reality

Special to Computerworld

Up to now computers, with all their faults, have only really been used by specialists. The automated checkstand will be an example of use at a broader level of society and could result in many new merchandising approaches.

For example, store operators could have the automated checkout system provide a transaction number that a customer would enter in another terminal to receive and give menus and recipes for the items purchased. It could also provide a list of specials on sale or even give private label price comparisons.

Such systems might be used to facilitate electronic funds transfer systems (EFTS) and eventually turn the "wired city" concept into a reality. We don't yet know all the services that creative entrepreneurs can provide.

In the case of EFTS or the "wired city," the question is who will make the initial investment. Technology will probably reduce the cost of terminals, but other elements of the investments needed (leased lines, for example) are not as susceptible to drastic cost reduction.

In the next generation, a person may be able to go into a store with an asset card and present it to the store clerk. The clerk would put it into a terminal and the transaction amount would be automatically transferred from the bank to the store.

But the implementation of this cost-saving transaction could be hampered by the number of institutions and people that would have to agree to such a system. For example, in the New York metropolitan area, how many banks, retailers and consumers would be able to agree on a third-party switching station to connect them with retail stores? How will the Federal Reserve respond and what are the antitrust implications?

A phased approach might start with check authorization terminals. The second phase would involve conversion of such check authorization and funds transfer.

In the near future – two to five years – automated checkstands will lead retailers to semiautomate their store reorder systems. There won't be one system, but many approaches.

In general, this should provide lower out-of-stocks and more demographics, i.e., selection of products that fit the needs of a given neighborhood. I say "semiautomated" because the store manager will always have to intervene to account for the influences that can only be decided at the store level.

Taking it one step further, let's say that a store computer system would print out a suggested reorder on paper and also put it onto a cassette. The grocery clerk could then place the cassette into an electronic reorder device with a wand. (On each shelf there would be representative symbols of items.) He could then walk around the store and override the reorder list by eliminating items he didn't want from the suggested reorder and also entering orders for items not on the list.

He would then plug the cassette, as some store managers now do, into an automated dial-up device. At night the warehouse computer would call each store and assess the information on the tape, erase it for the next day, make a list for the warehouse and print out a shipper.

The store-level computer could store up information and be interrogated by a host computer in the headquarters or warehouse. It could dial the store computer and check prices, movement, cash, even environmental conditions. It could also print out financial statements for the store management and even communicate merchandising or other instructions.

These computers can reduce the level of inventory carried in the warehouse and reduce the cost of carrying that inventory by virtue of knowing precisely what products are in demand.

Another possibility involves coupons which are costly for retailers to handle.

If a symbol was put on the coupon, there would be no need for this complicated process in automated stores. The scanner would accept the coupon, keep track of how much was owed by each manufacturer and verify the item was on order. It could even be possible to obtain demographic data on groups and compare it on purchases.

The second generation of the symbol-marked coupon would be the development of repurchase information by inserting coupons good for cash or repurchase in new products.

Such data will probably be collected by some third party and supplemented with movement data. Service firms may collect it from retail organizations and syndicate it to create data packages available to manufacturers.

Western Chain Finds POS Eases Expansion, Guesswork

LOS ANGELES – Comparison of results from manual and automated systems has made The Akron chain appreciative of its electronic point-of-sale (POS) system — an appreciative, in fact, the company plans to convert 72 more stores to POS in the future.

At present, POS systems are installed in The Akron's Columbus Stores Division in Houston, Dallas and Phoenix. Columbus stores specialize in imported and domestic merchandise ranging in price from 99 cents to $999.

Each Columbus shop sells about 5,000 different items, with 17,000 to 18,000 replenishment units being shipped to each store biweekly from the firm's 400,000-sq-ft central warehouse in Carson, Calif.

All stores are linked to The Akron's headquarters here by a computer system designed by the Business Machines Division of the Singer Co.

"We now have immediate access to every bit of data we need to make management decisions intelligently," said Bernard Field, chairman of the board. "This system takes the guesswork out of inventory control and sales analysis and permits us to devote more time to merchandising."

Most of the data flows to and from the Columbus stores through three Singer Model 909 Modular Data Transaction Systems (MDTS) electronic data terminals located in each Columbus store. The intelligent data terminals are actually an extension of The Akron's computer complex based here.

The terminals perform three major applications: store transaction recording and sales analysis, financial and administrative reporting and inventory control.

Many of the store managers think of their terminals as silent assistants that don't mind working overtime, Field noted.

Each Columbus store manager can take flash totals at each terminal any time during the day and as many times as he wants. Depending upon programming, the 909 can give from 31 to 62 breakdowns – by department, merchandise, nonmerchandise, salesperson, cash, charge or other.

In addition, there are four grand totals (sales, cash, tax and discount) and six transaction counts: total number of cash sales, charge sales, other entries, total transactions, voids, total taxable items or minus entries.

At the time of each transaction, the MDTS terminals, which are equipped with Model 710 magnetic media readers, automatically capture price and merchandise information from magnetically encoded tickets.

All business transacted at each terminal is connected to a corresponding in-store Singer Model 800 Individual Store and Forward (ISF) module.

Each ISF, in turn, is connected to a single store modem which is set up to automatically answer a telephone call from the store's host computer here. All store transaction data is transmitted unattended to the computer over telephone lines after the store closes at night.

Once the data reaches Los Angeles, it is edited and reformatted for use in a wide variety of management reports. One of the first applications is a simple register balance followed by a sales audit.

In a second major application, the terminals are used by each Columbus store to record bank deposits and transmit payroll information to the home office, eliminating tedious in-store paperwork and speeding up the flow of data to the central accounting department.

"But where the system is really paying for itself is in merchandise management," Field stressed. "We have devised a system for perpetual inventory control that is working better than we had anticipated."

Any store decision affecting merchandise is transmitted from the stores to the home office through the terminals to achieve a complete ordering cycle. Store managers key in orders, interstore transfers, inventory adjustments, receiving data, returns to vendors, adjustments any time during the day.

The store manager starts the cycle by placing an order from any of his three terminals. He can transmit any part of his order at any time during the day when the terminal is not in use.

Each store manager references a customized "Status and Order Guide" in placing his store orders. This report, which is updated weekly, details by department what is on hand and what is available to order on about 5,000 items.

When the store manager has completed his order by keying in reference numbers and quantities at his terminal, this data is used to prepare the order editing and preparation of warehouse withdrawals report.

In preparation of this report, the computer performs prescribed logic steps and [illegible] for the packing slips, assigns priority for [illegible] giving preference to customer special orders over stock replenishment, and shows disposition of each order, either shipped or cancelled. This report actually is an audit trail which provides the total units and total dollar extensions for the individual store's inventory control.

The data is used to produce the warehouse picking slip which is organized by warehouse location. A separate picking slip is produced for each forklift operator by warehouse storage location.

To take inventory, Columbus managers mount the terminals on stock carts, rolling them up the aisles and entering data with the magnetic media readers.

'Don't Forget Real World' When Picking POS Devices

The motto of any point-of-sale (POS) selection committee must be "don't forget the real world." The nature of the business is merchandising, and the payment and data capture process should be as painless as possible.

Economizing on what could be a one-time programming effort in favor of a system which will hinder [illegible] the entire POS operation for its lifespan is the pitfall to avoid.

In comparing a terminal which would require a sizable one-time software effort to integrate with another which would require almost no effort but would present on-going operational problems, choosing the former may be the wisest move. It must be remembered that simplicity, speed and control are keys to success at the point of sale and anything that makes the procedure more difficult, time-consuming or error-prone should be avoided.

How can this be accomplished?

One industry specialist suggests the following areas as the ones essential to efficient operation.

Printers

The printer is the weakest link in any terminal since it is the only remaining mechanical part and therefore the center of reliability problems. Multiple printers, therefore, would seem to adversely affect the mean time between failure rate of the terminal.

On the other hand, single-printer terminals introduce the problems of ongoing supply costs and journal legibility.

Ease of form insertion, number of legible copies, maximum form size and lines of print per item entry should also be considered.

In addition, the selection committee should ask itself whether the paper loading procedure is simple. Does an automatic line count control document printing? Is print size legible and is print full alphanumeric? Are promotional messages and a store logo printable on each transaction? Is the journal [illegible] visible? If not, and two-part paper is in use, it's a simple matter not to print a journal and not realize the error until the end of the day).

In the area of sequence control, the level of ingenuity of design directly affects training requirements and accuracy of operation. It is reasonable to assume that a terminal with 48 distinct instructions is superior to one with 24 since the number of available instructions has a direct bearing on the ease of learning and operating the unit.

The need to supplement sequence control capabilities with printed instructions elsewhere in the face of the terminal should be interpreted as a weakness in the control technique.

No terminal is significantly superior to any other in key entry of a one-item cash and carry sale. Attention should therefore be paid to seldom-used, complex transactions to determine the power of the sequence control technique. For example, how difficult is it for the operator to record a layaway return where a cash refund is due and the original sale included a layaway fee, employee discount and some nontaxable items?

It is also necessary to consider how many messages light simultaneously – in other words, how much is left to operator decision – and whether a visible and audible error signal is present.

Since the keyboard and sequence display are closely related, the weaknesses in one may well be compensated for by the other.

Points to consider are:

- Is it compact? Can the operator use the touch method of entry?
- Is each key [illegible]
- [illegible] any single-function or does it mean different things at different times?
- Are the keys not logically usable in a specific stage of a transaction "locked out"?
- Is keyboard entry buffered sufficiently to enable operators to enter information at peak speed?
- Does it handle multisplit priced items?
- Is access to the subtract function under operator, terminal or lock control?
- Does entry provide an audible feedback?

"The payment and data capture process should be as painless as possible."

An interesting experiment would be to count the number of actual keystrokes required on each type of transaction and compare this count between terminals under consideration.

This element of the terminal is often dismissed as unimportant, but many terminals flunk the least demanding specifications test. For instance, a new element in electronic registers, the cooling fan, has been known to draw bills back in to the dark recesses of the cabinet and many a head cashier is complaining there isn't enough space under the till to store all the checks and large bills.

This means more frequent pick-up, security problems, etc., for the life of the system, and it also means jammed cash drawers which put checkout lanes out of commission.

The POS terminal should have lock and key controls on power, the cash drawer, [illegible] memory, non-capacity, totals and internal program logic. Further, if someone else in town has terminals like yours, there's a fair chance that their keys will fit your units.

And just as locks control access to the terminal, totals monitor use of the terminal and should be looked at from the control viewpoint as strongly as from the data capture angle.

The overriding operations consideration should be how easy it is to balance a day's business.

Selection questions should include: Are key totals nonresettable, and how easy is it to cycle them? Are the totals kept in nonvolatile storage? Are separate totals kept for minus entries, voids and pieces of media?

Logic

If the terminal is to operate off-line as well as on-line, the difference should be transparent to the operator. Given the low failure rates of electronics coupled with the rapid turnover in personnel in most firms, the ability of the operators to cope with different procedures is suspect.

The volatility of the logic should also be examined to determine how power failures or static electricity will affect it.

And, finally, consider whether an enforced sign-in and sign-out routine is present, whether the entry of amount, tax fees and deposits are enforced and whether selection itemization of taxable and nontaxable items is available.

With In-House POS

'Going It Alone' Can Be Hassle

By Sheldon M. Kleinman
Special to Computerworld

Many retailers with successful point-of-sale (POS) systems have devoted prodigious amounts of time and money to improve merchandising, financial control and efficiency. Vast resources have been expended in systems planning and experiencing false starts before these systems have reached their present apex.

Solutions obviously differ for the large national retailer and the medium-sized chain. The message here is that POS cannot be treated casually or by the inexperienced. It can be expensive, traumatic and thoroughly disconcerting, if not approached properly.

For the retailer who is on the threshold of POS but is hesitating for lack of experience or knowledge, the best advice is to investigate carefully in-house vs. service bureau systems. There certainly has been enough experience by small and large retailers to assure the advantages of POS without most of the headaches or expense.

Before providing the answer to this dilemma, it would be appropriate to indicate the major areas of concern regarding a potential POS installation.

First, define the requirements. A complete and careful preliminary evaluation must be made of desired accomplishments. For example, is credit a problem? Is smarter merchandising the target? Is better internal control the goal?

Then define the specifics. What type of reports are needed? Where do data elements come from? Who needs which reports and when?

After all of the definitions have been assembled and correlated, it is essential that someone with experience review all the pieces with the prospective user so there are no holes, duplications or nonessential data.

Equipment Evaluation

At this juncture, the confusion factors begin to run rampant and it is in this phase that most retailers make their critical mistakes.

As any prudent businessman would, a user should call his local vendors and announce he is interested in purchasing a POS system. Each vendor, after analyzing the specifications, will respond with a proposal.

Usually attached to this proposal is a list of customers for reference purposes. Bear in mind that the vendor, if he is doing his job, should provide references that have similar characteristics to the user's store, e.g., the same lines, size, style of merchandising and distribution methods.

The user will probably find himself with several proposals. One requires an in-store minicomputer on-line, another needs store and forward devices that require polling, one requires an in-store controller tied to a large central computer, ad infinitum.

One thing is evident, however; the vendors have responded to the user's specifications – not with the configuration for his needs, but with the system each salesman can best sell and support.

The user must remain steadfast in the fulfillment of his goals. If he has done his planning properly, he is in a better position to know what he needs and should not be swayed.

After the user has chosen the type of hardware and has substantial proof that the software exists and is working reliably, he can begin to delve into the nitty-gritty of price, delivery, vendor support, training, maintenance contracts, communications requirements, etc.

And when he finally agrees to all the terms, signs the contract and goes away with a sigh of relief that this decision point is passed, he may think he can now relax. No way!

"The message here is that POS cannot be treated casually or by the inexperienced."

Assuming all the hardware is delivered as promised (it seldom is) and all of the previous stages have been successfully completed, the user is ready to install it.

Unless the terminals are "burned in" (run in operating mode for several weeks), he can look forward to failures the first few weeks. This often is due to equipment being jostled in shipment and marginal circuitry that decides to fail at precisely the moment the user decides to use it. And he may now find that perhaps the vendor's service department is not responding in a way that they convinced him they would.

When the user has run some test communications or polls prior to installation so he's sure that his data communications works and his software and applications are tested and live, some unaccounted-for situation will arise which are not compatible with the software discipline. Back to the drawing board.

If the user had adequately and completely planned this project and had successfully reached this plateau, he will find that at least a year, and perhaps two, have elapsed since he first conceived the idea to pursue POS and committed substantial financial resources to that end.

Let's look at one retailer who approached the problem. Jones recognized the value he could get from POS. He knew that in order for his three stores to compete with the giants, he had to be smarter, turn faster and have fewer markdowns.

In short, his goal was to "get the right merchandise to the right place at the right time and price." He wanted to concentrate on what he knew – retailing. He had no computer and frankly didn't want the attendant problems of having one.

So Jones contacted his auditing firm for advice. The auditing firm recommended a computer service that specialized in POS processing.

The computer service group sat with Jones and discussed his goals and developed a program to fit his needs. The service group developed detailed specifications and, because of their experience with all vendors' terminals, were able to cut through the mountains of confusion.

The service came up with the right hardware/software/configuration for Jones – and, because they had had substantial dealings with the vendor, were able to negotiate more favorable terms and conditions than Jones might have been able to get by himself.

The computer service then arranged for the burn-in and system checkout prior to installation.

Jones received a complete system, designed to his needs: fully documented, fully installed and fully operational in less than 90 days and at less than half the cost of the alternative approach.

That's just great, one would say – but where does the retailer find a computer service as good as the one Jones is utilizing?

Easy – there are several around. Selecting the right one is the trick.

Selecting a Computer Service

Here are some guidelines to keep in mind when selecting a computer service:

- Does the service know the retail business? Retailing should be its specialty or high on its list of services.
- Is the company financially stable? Will it be around next year? The year after?
- Is it national in scope? Can it service remote locations?
- How extensive is its retail software library?
- What is its reputation in the industry?
- Is its service agreement formal and precise?
- Does the service provide adequate data security?
- Does the service have adequate back-up capability for data. For processing? Are file duplicates maintained? If its computer goes down, does it have back-up computer power?
- What commitments have been made by the service bureau to meet long-range needs? Will software continuity be assured long after the POS equipment is installed?

Conspicuously absent from the above points is the issue of price. If a computer service meets substantially all of the above criteria, its rates are fair and are for service performance that is equitable.

POS is here to stay – it can be justified if it is put all together. By following the guidelines for selection and proceeding down the path of using a computer service instead of attempting to "go it alone," a user can "put it all together" faster, more successfully and less expensively.

Kleinman is president of Androcor, Inc., a subsidiary of Boeing Computer Services, Inc.

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Data Communications is a complicated and rapidly changing field. And this seminar will give you the information you need to keep on top of the subject. Led by the nationally recognized teleprocessing consultant, Dr. Dixon Doll, the course covers recent changes in areas like SDLC, HID-LoD, DDS, newly approved major revisions to WATS, and the impact of satellite carriers and specialized carriers.

The course will also cover general data communications topics, including intelligent terminals (performance and selection criteria), network software handlers (e.g. CICS) and network organization and design. And, you'll learn about saving money using such innovative concepts as split-stream modems, remote multiplexers/concentrators, diagnostics for fault isolation and front-end processors.

All participants in this seminar will receive a 2-volume loose leaf outline of all course materials (prepared by ICC Institute), a copy of "Data Modems Selection and Evaluation Guide" by Vess V. Vilips and a "Data Communications and Teleprocessing Dictionary".

You should attend this seminar if you are currently involved in data communications on a management or operational level and wish to expand your knowledge of the field – or if your company will be going into this area in the near future.

This seminar runs two days, and total cost, including workbook, reference materials, luncheons and continental breakfasts is $350. Additional registrants from the same company qualify for a reduced rate of $300. Current schedule is as follows:

Miami	Miami Marriott	December 2 - 3
Los Angeles	Los Angeles Marriott (Airport)	January 13 - 14

Data Base Management

A practical approach to the design and implementation of data base systems.

The difference between an effective data base system and a waste of computer time and memory lies in effective planning, system selection and management. And this course gives you both the information and the basic experience you need for the proper design and implementation of a data base system.

Given in association with Leo J. Cohen and Performance Development Corporation, this course covers a comprehensive list of topics, including:

- *the description and definition of the Data Base System Project.*
- *the development of a full service analysis and system design.*
- *optimum file organization and indexing techniques.*
- *all available indexing techniques and their implementation.*
- *all aspects of system management.*
- *and much more.*

One of the key features of this course is the workshops, in which you'll apply what you've learned. And before you're finished you'll have "done" a complete, on-line order entry / inventory management system.

You should attend this seminar if you are (or will be) involved in the design and implementation of a data base system – whether as a DP Manager, Data Base Administrator, Planner, Analyst or Programmer.

This course runs for 3 days, and costs $350, including course materials, continental breakfasts and luncheons. Additional registrants from the same company qualify for a reduced rate of $300. Current schedule:

~~**Chicago**~~	~~Playboy Towers~~	~~November 18-20~~ **SOLD OUT!**
Denver	Denver Hilton	December 9-11

Contracting for Computers and EDP Support Services

A seminar that can help you protect your EDP investment – and your system.

In an industry that's famous for its "promise them anything" attitude, you need good, effective contracts from the vendors that supply your installation. And this seminar gives you the information you need to get them. It will show you how to protect your installation from late deliveries, inadequate equipment or services and the costly disruptions that they can cause.

Course topics include the lease and purchase of computer systems, separate hardware and software – the purchase of time sharing, data processing services and consultation – and the use of facilities management.

Under the personal instruction of Roy N. Freed, a nationally known lawyer, author and expert in the field of computer law, you'll learn how to place yourself in a strong bargaining position, how to insure on time delivery of exactly what you want, how to set reasonable performance standards for warrantees – and much more. You'll also receive a complete resource notebook, including *sample vendor contract forms*.

You should attend this seminar if you are involved in the purchase of EDP equipment or services, whether as a corporate counsel, contract administrator, DP manager, consultant or officer of a using firm.

Cost for the entire 2½ day seminar, including complete resource notebook, continental breakfasts, luncheons and coffee breaks is $295.00. The current schedule:

Chicago	Hyatt Regency O'Hare	December 4 - 6
Los Angeles	Los Angeles Marriott (Airport)	January 15 - 17

How to Draft Effective Legal Agreements Relating to Computer Technology

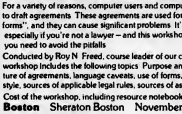
A one-day workshop for non-legal technical people

For a variety of reasons, computer users and computer manufacturers often use non-legal people to draft agreements. These agreements are used for specific transactions and as "standard forms", and they can cause significant problems. It's easy to overlook important legal points – especially if you're not a lawyer – and this workshop is designed to give you the basic knowledge you need to avoid the pitfalls.

Conducted by Roy N. Freed, course leader of our comprehensive contracting seminar, the workshop includes the following topics: Purpose and functions of formal agreements, architecture of agreements, language caveats, use of forms, checklists and outlines, suggested writing style, sources of applicable legal rules, sources of assistance, and more.

Cost of the workshop, including resource notebook and lunch is $135. Current schedule:

Boston	Sheraton Boston	November 20th



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NEW

A seminar on more efficient operation of your computer system.

Large installations now expect many programs to run simultaneously and efficiently. And that's what this 2½ day seminar is all about. Under the leadership of Dr. Ivan Flores, author of 14 books and one of the world's most prolific writers on systems software, you'll gain an excellent technical knowledge of your operating system, OS and VOS. The course uses the IBM/370 as its subject computer, because of its popularity, and includes these topics:

- Overview of Operating Systems
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- Job Management
- Task Management
- Data Management
- Virtual System Philosophy
- Virtual Hardware
- Virtual Storage Operating Systems

Everyone involved with the operating system can benefit from this seminar. Programmers can employ its lesser known features. The manager can choose an operating system and options to handle his installation more efficiently. The chief operator can understand what's happening and better manipulate the system. The executive can determine the requirements for his plant.

Cost for the entire seminar, including course materials, luncheons and continental breakfasts is only $295. Current schedule:

New York City	St. Moritz Hotel	Feb. 3 - 5, 1975

To: Ed Bride, Vice President, Editorial Services, Computerworld
797 Washington Street, Newton, Mass. 02160

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Stores Move to Self-Service System With Aid of POS

ATLANTA – Selling something has always been a special art, one which Williams Bros. Lumber Co. here mastered long ago. Today, it is improving on the art, using point-of-sale (POS) equipment to sell its complete line of building materials, hardware and paint.

Automation played a variety of roles in helping achieve the success of Williams' integrated operation. In the most recent, example, at the firm's Chamblee lumberyard and retail store, cash sales are up 15% and customers are handled much faster – and have commented favorably – although the store now operates with one less employee.

This was accomplished by switching from a service operation to a self-service system with two checkout lines equipped with NCR 280 POS terminals.

Generally, only one checkout line is needed, because the terminals are 30% faster than conventional mechanical cash registers, the firm said.

In the past, a sales ticket was written on each transaction and all analyses and reports were prepared manually from the ticket copies. Now Williams' 14 departmental breakdowns are entered into the terminals and totals are produced automatically at the end of the day.

Williams found this increased accuracy, tightened controls and speeded back office reporting to such an extent that, with the three newest and largest of the five retail outlets now on the system, at least one full-time person is saved on reporting alone.

Reports generated include daily cash balance; a variety of weekly and monthly sales analyses, by department, comparing current and past performance and including percent of increase or decrease; comparisons of per-store salary costs to sales; analyses of production costs; costs of sales trainees, clerical employees and supervisory employees; and overall costs, again in comparative form.

Moreover, management can now get immediate departmental sales information from the three stores, at any time, just by phoning the store manager and asking him to read out his totals.

Shoplifting Reduced

"Channelling customers past the checkouts substantially reduces shoplifting," said James S. Stansberry, director of store operations. "However, if you are going to channel customers, you must have an efficient checkout operation, and we do.

"In the past, on Saturdays, we used to have lines of people backed up at the sales desks with number tags in their hands. Now we move them past the NCR terminals quickly because the terminals speed cashiering with features like lighted operator lead-through instructions, automatic calculation of differing sales tax rates in adjoining counties, etc."

Electronic terminals at the checkouts are just the tip of the automation iceberg, however. For example, the firm's new sawmill at Covington is one of the most automated facilities of its type in the area. Operated by two men with push buttons in air-conditioned booths, the mill handles full-length trees instead of logs and has a production capacity of more than 25 million board feet of pine lumber per year.

The other major facet of the firm's business, its 10 ready-mix concrete plants, is even more automated than the lumber operation. "Computerized concrete" is produced under punched-card control supplemented by electronic scanners and electronic scales, all of which combine to guarantee precision and consistent quality.

Increased Utilization

"Our future plans include additional retail outlets, both in the metropolitan Atlanta and elsewhere, additional concrete plants and possibly acquisition of more sources of raw materials," said Harold Williams, vice-president of sales.

"We also plan to increase our utilization of the NCR 280 terminals, both to speed customer service and speed our gathering of information on the operation, so we can provide data faster to competent people who can act on it."

While the new terminals have already paid their way, Williams said, they offer "a good deal more potential. We can use them to give us information on up to 40 departments, plus all types of sales transactions – cash, charge, bank cards, returns, CODs, lay-aways and the like, because our terminals are equipped with extra memory units. And we could set up hot sales items or loss leaders in separate departments and watch them closely.

"We can also link the terminals on-line to our computer, if we wish. We just recently outgrew our first computer and had to install a larger one.

"Further, we can put light pens or "wand readers" on the terminals to speed the checkout operation even more.

"When we decided to go to a self-service operation in our largest stores last year (1973), we first looked at mechanical cash registers because they would have provided enough totals for our current needs," continued Williams.

"However, we selected the electronic terminals instead, not only because they move the customers through faster today but also because they offer so much more for tomorrow.

"And, with our history of growth, we have to gear realistically for the future."

Williams Bros. Lumber Co. reported equipping two checkout lines with NCR 280 POS terminals has speeded checkout and evoked favorable customer comment.

Food Chain Finds Terminals Insure Centralized Control

KING OF PRUSSIA, Pa. – Gino's, Inc.'s management believes that public acceptance of its hamburgers and fried chicken is not enough to insure effective business management. Rather, centralized control over management standardization, quality and service is the answer.

That is why Gino's has implemented a system of Documentor point-of-sale (POS) terminals, which are manufactured by Addressograph Multigraph, Inc.'s (AM) Data Systems Division.

AM's Documentor terminal, designed especially for the food service industry, records the number and value of sales, reports and measures inventory, provides portion control and performs a host of other management duties electronically.

Such a summary is a major saving in time and money to Gino's management. Management gets a clear picture of popular items and unpopular ones on the menu.

According to Peter Palumbo, Gino's DP director, Documentor terminals are now being installed in existing units, replacing standard cash registers, and all new Gino's and Rustler Steak House units will be equipped with Documentor terminals.

Scanner units are used generally in fast-food installations that have fixed menus and fixed prices. Keypad units are used in other installations where menus change often and a clerk totals items.

Network in Process

Gino's is now establishing a telecommunication network in which the Documentors are becoming part of an information system that reports all transactions to a central computer. The computer then compiles and prints out a summary of all of the items reported by the terminals.

Reporting, or polling, of the terminals is done overnight when the restaurants are closed for cleaning and maintenance. The programmed computer can ask each terminal system to report at a given time; also, the computer can ask any specific terminal at any time to make a report. All reports are made in electronic signals over telephone lines.

When Gino's network is completed, it will tell the company's management each morning the number of previous day's transactions, cash received for the day, cash for the year-to-date and the amount of supplies (buns, meat patties, servings of French fries, etc.) remaining.

Such an audit, done visibly and manually, would require many hours by many persons. To several of the major fast-food, companies today, such bookkeeping represents yearly costs in five and six figures.

The agreement between Gino's, Inc. and AM's Data Systems Division calls for delivery of approximately 400 terminals over a two-year period. About half of the units will be of the scanner type which electronically read pencil-marked sales checks the way a teacher reads filled-in blocks on a multiple choice examination paper. The scanner then sends a signal to the terminal's memory.

The other half of the order is for Documentor terminals which have keypads similar to standard cash registers; input signals are made when keys are depressed. But both types of terminals report to the central computer in the same way, and both present visible display of totals to patrons.

Certain little-publicized activities are at this very moment reshaping the computer industry.

Without your realizing it, they've already taken over a third of computer services...they now account for half of all operator-oriented terminals . . . and today they are responsible for 10% of the minicomputer market.

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In Nonbinding Position Paper

Bell Admits Investigating Alternatives to the DAA

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – AT&T has revealed it is investigating the possibility of directly connecting some data sets to the dial-up telephone network. Although the AT&T statement was made in a nonbinding position paper in a Federal Communications Commission (FCC) proceeding, it marked the first official statement of this type from the carrier.

AT&T and Bell System operating companies now require Data Access Arrangements (DAA) on all dial-up data sets supplied by noncarrier vendors. The current tariffs make no distinction between answer-only and other types of data sets, with all types uniformly requiring the Bell-supplied DAAs.

The AT&T position, outlined in an opposition statement as part of the FCC proceeding, opposed a proposal from the Computer and Business Equipment Manufacturers Association (Cbema) to separate data equipment into a separate inquiry.

As part of its submission, AT&T said "the Bell System is now exploring an alternative method of connection for . . . customer-provided devices which do not perform call origination functions – the answer-only data set."

If the study proves successful, "AT&T will work to implement such a program," the statement continued. A Bell spokesman said devices which do not originate calls "offer fewer technical difficulties" for direct connection.

The Bell admission that alternatives to the DAA are being explored is far from conclusive, according to several regulatory experts. Because the AT&T paper raised the question only in an opposition statement, this has considerably less impact than a formal proposal to modify existing interconnection tariffs, one regulatory source said. Nevertheless, it is the first official indication that AT&T may be ready to modify its DAA requirements [CW, Nov. 6].

In discussing alternative connection possibilities, AT&T said "each type of terminal device presents different technical obstacles for connection to the network which must be overcome." The paper said it would not be possible to develop "a single workable program for the direct connection of all types of [data] equipment . . .

"No alternative program for direct connection has been proposed which would assure the necessary protection of the telecommunications network," the AT&T paper concluded.

Asked to comment on the potential direct connection of answer-only data sets, a Cbema spokesman said such a plan would not go far enough.

In a related regulatory proceeding before the Public Utilities Commission of California, a witness for Pacific Telephone and Telegraph Co. (PT&T) said the Bell System was planning to extend a more liberal interconnection policy into the data set area.

The PT&T witness, appearing in a proceeding related to voice answering devices, was asked whether Bell might soon allow the use of connecting modules supplied by the user inside data sets. The PT&T spokesman said that Bell was planning such a change.

In another development, sources close to the FCC believe the commission may soon separate the data interconnection question, perhaps along the lines proposed by Cbema. Regulatory sources doubt that Bell's justification for the DAA would stand up in such a proceeding if AT&T technical experts were called.

Major User of the Lines

IBM Questions Proposed N.Y. Isal Tariff Validity

ALBANY, N.Y. – If a proposal for a special monthly rate on Information System Access Lines (Isal) is approved in this state [CW, Nov. 20], IBM would be one of the major telephone users to be affected.

In a statement filed at a preliminary hearing in the Isal proceeding, IBM said it has "somewhat more than 2,500 Isal lines in New York" and its customers must also utilize a "substantial number" of the same type of line.

Yearly Rate

The Isal proposal would levy a $15/mo charge on all intrastate phone lines behind a PBX or in a Centrex system that are used to access a CPU. The rate would be charged on a yearly basis, if the present New York Telephone Co. plan is approved by the New York Public Service Commission (PSC).

IBM said it was concerned whether the phone company "has in fact incurred significant costs identifiable to Isal lines so as to warrant a separate charge." It also questioned "the fairness and legality of singling out Isal lines as the one form of above-average telephone usage to bear a special charge."

The IBM statement said New York Telephone will have to submit specific information on additional expenditures that the phone company has incurred "in each central office as a direct result of Isal usage." It said that rates charged for telephone service should "not discriminate unfairly against nonvoice users of the telephone system."

'Discriminate Against Users'

Noncomputer business usage of the telephone network could also place above-average demands on the system, IBM said, and it included as examples facsimile transmission and voice uses. "Singling out Isal lines as the one service to bear an extra cost . . . seems to discriminate unfairly against users," the statement said.

IBM called on the PSC to "broaden this proceeding" to investigate all forms of excess telephone usage. It said the company was prepared to participate in such an investigation.

Braegen System Handles Multiple Applications

SUNNYVALE, Calif. – Braegen Corp. has introduced an intelligent terminal system designed to provide users with a single system that can handle multiple applications.

The major application of the Virtual Terminal System will be as a replacement for the IBM 3270, according to a company spokesman, and in this area it is priced 10% to 20% below the IBM CRT. In addition, the terminal system can be used in 2780 and 3780 applications and in key-to-disk installations where it compares favorably with the IBM 3790, the spokesman said.

The heart of the Braegen system is a multiprocessing controller known as the B40 which can serve as either a remote concentrator or a central front-end device. One controller could handle as many as 50 CRTs but this depends on the configuration, the spokesman said.

By using the Virtual Terminal System, a user could combine such functions as those of a Hasp workstation on the same communications line with a 3270 application, or a 3270 message could be printed out on a 1403 printer. The handling of both interactive and batch jobs is controlled by multiple software interfaces.

If a B40 controller is installed at both the remote end and central site, Braegen offers a full-duplex line control procedure that allows the transmission of data at speeds up to 50 kbit/sec. In addition, the front end B40 can service two host CPUs which can be either 360 or 370 models.

In local mode, terminals can be supported up to 7,500 feet from the controller compared with the 2,000 feet restriction with IBM 3270s, he said. It is possible to handle up to 16 CRTs on one local cable with the system.

The terminal system includes a full line of peripherals with displays, printers, card readers, disk subsystems and magnetic tape. Data Products peripherals can be interfaced to the system as well as the Diablo printer and Bridge card equipment.

When operating as a replacement system for IBM 3270 or other terminals, the Braegen system can be installed on a compatible basis without software changes. The terminal system can operate with 270X, 370X, Memorex 1270 and other front ends, a spokesman said.

A typical 3270-type system including 12 CRTs with controller costs $1,595/mo on a one-year lease or $1,452/mo on three-year lease. The system will be supported by California Computer Products, Inc. (Calcomp) field service personnel and first installation will be restricted to 10 major metropolitan areas. Braegen is a Calcomp subsidiary at 927 Thompson Place, 94086.

Harris Ups Cope Prices

DALLAS – Harris Corp. has raised prices approximately 8% on some of its Cope products and services.

The price increase will be effective immediately for new lease and maintenance contracts, while prices for lease and maintenance on installed lease equipment will be increased subject to contract terms.

Products affected include the Cope 1200 Series remote batch terminals and associated peripheral equipment. Not included are lease prices on Cope 65 communications controllers, interactive terminals and lease and maintenance prices on the company's recently announced Cope 1600 remote communications processor.

Continuing inflationary cost increases in materials and labor were cited as reasons for the price boost.

Mortgage Information Network Brings Buyers, Sellers Together

PALO ALTO, Calif. – While the money market continues to look bleak, funds are available for secondary mortgages. But up until early this year, it was difficult to bring the buyers and sellers together quickly and effectively.

To accomplish this task, Amminet, Inc. and Remote Computing Corp. (RCC) formed a nationwide communications service.

Amminet is a nonprofit corporation formed by the U.S. League of Savings Associations, the American Bankers Association, the Mortgage Bankers Association of America, the National Association of Mutual Savings Banks, the National League of Insured Savings Associations and the Federal Home Loan Mortgage Corp. Their objectives are to increase the liquidity of mortgage investments by making it easier to buy and sell, stabilize and increase the flow of money into housing by attracting investors.

The Amminet program was brought to reality with the assistance of RCC and its nationwide information services. The firm's communications network permits customers in every state to have access to the company's seven Burroughs CPUs toll-free over standard telephone lines.

According to Charles G. Calderaro, president of Remote Computing, Amminet subscribers can also take advantage of the firm's library of finance-oriented programs that pertain to accounting, planning and analysis.

The RCC network consists of seven Burroughs 5700 mainframes, three Interdata 50 computers, two Livermore Data Systems (LDS) 650 multiplexers and seven LDS 670 data distribution multiplexers.

E.A. Joakimides, RCC's vice-president of systems development, commented that one of the keys to the economic reality and success of the network has been the use of the LDS high-speed multiplexers.

The low-cost, high-performance multiplexers have permitted the company to set up remote stations in key cities across the country and use lower cost Band One Inward Wats lines to provide toll-free service throughout the 48 continental states.

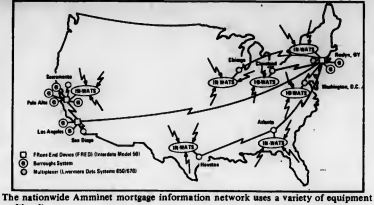
Each of the remote locations outside of California has an LDS 670 which supports a minimum of five dial-up lines and a number of Wats lines. "For example, the District of Columbia location Band One monthly costs are $575 per full business day line, whereas Band Two costs would be $860 and Band Five would cost $1,695," Joakimides commented.

"It is easy to see that by using only Band One Wats lines for each office area we can achieve substantial savings to our entire operation." To handle all of the network's 200 customers on a single nationwide Wats line, the total cost would be two to three times the present cost, he estimated.

Joakimides said that two years ago the firm added San Diego and Sacramento to the Los Angeles and Palo Alto network with the LDS 660s. At the present time he sees no economic reason for upgrading to the LDS 670.

However, he noted that when the nationwide Amminet network was established it elected to use the LDS 670s because of the parallel interface, automatic transmission speed detection and built-in diagnostic capabilities.

"The LDS 670s can replace computer interfaces at our key locations," Joakimides stated, "and can act as local line adapters and interfaces." The unit's central character processor permits the intermixing of up to seven different speeds, automatic transmission rate detection and automatic output rate adjustments.



The nationwide Amminet mortgage information network uses a variety of equipment on Wats lines.

Distronics Adds Services For Wholesale Distributors

CHICAGO – Marketing a standard package of computerized business services, Western Union's Distronics Corp. has announced plans to design and implement an expanded teleprocessing system providing additional management information services to wholesale distributors.

Presently a shared-network, on-line system, the service will increase the number and variety of its business applications through additional hardware and software, according to the firm.

Within the month, the system will provide subscribers with a cost-cost/list-list application designed to help wholesalers make price changes more easily, the company commented.

Charging subscribers a percentage of their annual volume, depending on how much of the network they require, the company said percentages currently range from .5% to 2.5%.

AJ Unit Includes Plotting

SUNNYVALE, Calif. – Anderson Jacobson, Inc. has introduced a TTY-compatible interactive terminal that operates at switch-selectable speeds of 10-, 15- or 30 char./sec.

Called the AJ 830, the unit includes a plotting capability which can be initiated by the use of an escape key on the terminal. Paper handling features include a form feed tractor and pin feed platen in addition to vertical and horizontal tab capabilities.

An Ascii character set is standard with either Ebcdic or Correspondence code available as an option at $3/mo or $140. An APL keyboard is also available at $8/mo or $140. The terminal includes switch-selectable printer spacing of either 10- or 12 char./in.

The AJ 830 costs $5,450 or $185/mo on a month-to-month arrangement. Longer term lease plans are available. First deliveries are scheduled for the first quarter of 1975 from 1065 Morse Ave., 94086.

Over Voice-Grade Lines

Trucking Firm Tracks Shipping Data

ST. JOHNSBURY, Vt. – On-line data communications helps St. Johnsbury Trucking Company, Inc., to provide improved customer service while tightening control over all shipping and business activities.

Ninety-two General Electric Terminet 300 KSR data printers at 29 trucking terminals in nine Northeastern states are continually sending and receiving shipment and equipment information and management reports over 11 voice-grade telephone lines.

GE Diginet 160 frequency division multiplexing equipment in the network makes it possible to operate nine terminals over one unconditioned voice-grade line. Information from the GE teleprinters is assembled in a Honeywell 516 front-end computer and passed to a Model 2050 mainframe for processing and file updating.

Keeping track of each shipment and piece of equipment is where the data communications system comes into use.

"Essentially we have built a model of our actual operation in the computer," David L. Brown, director of information systems, said. "The model shows the current location of every shipment and piece of equipment all of the time. With this information, customer service is greatly improved and cost savings from planning the use of resources are made possible."

David Lavigne, DP operations manager, described the basic work cycle of the trucking operation.

"During the morning, we deliver freight to customers on straight trucks from the local truck terminal. Shipments for other localities are picked up during the afternoon and loaded onto line haul trailers during the evening.

"During the night, the line haul operation moves the trailers to their destinations, sometimes going through a break-bulk point. Breakbulk is an intermediate point where trailers carrying freight for many destinations are emptied and the freight reloaded onto trailers for specific destinations," he explained.

"When the local pickup vehicle returns to the truck terminal at the end of the day, the printers and computer system begin their role. A form is typed on the Terminet unit based on information furnished by the shipper on his bill of lading. This 'pro' is the basic control document of a motor carrier.

"The system looks up the destination city and responds with the proper destination terminal, and beyond interline carrier, if one will be required. Charges for the move are determined by a central tariff rate group using CRT equipment to communicate with the computer," Lavigne said.

"Freight is then unloaded from the straight truck, moved across the terminal platform and loaded onto a line haul trailer. Messages are entered by the Terminet units advising the computer system of shipments loaded on trailers, when the trailer is sealed and details of the trailer dispatch.

"When the trailer is dispatched, an inbound manifest is sent to the destination terminal showing a summary of the shipments and the rated delivery pro set for every pro on the trailer.

"In the early morning hours, a tracing report is transmitted to each data terminal. This report tells the truck terminal the current status of every shipment destined to that terminal. This is used principally for customer service, but also functions as a basic shipment control system.

"A 'morning report' is also transmitted to data terminals prior to 8 a.m., and gives an operations recap for the past 24 hours. It gives each truck terminal manager a quick rundown of his performance for the previous day, cumulative totals for the past week, the same day a year ago, the same week a year ago and the like. By looking at one page, the terminal manager knows just where he stands," Lavigne said.

Brown pointed out that all system information is available to all locations. "No information is privileged. We share all of the news. Of course, the ability to change information is strictly controlled, but any terminal can retrieve whatever information it wishes."

Mike Keach adjusts General Electric Diginet 160 modems used to interface with telephone lines at St. Johnsbury Trucking Co.

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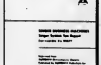

COMPUTER INDUSTRY

CI Notes

Six Companies React To Economic Downturn

Hiring freezes, layoffs and shortened work weeks are some of the measures being taken by DP firms in attempts to either tighten their belts in advance of economic uncertainties or as reactions to recent periods that did not meet forecasts.

IBM has instituted a freeze on hiring through the end of this year while it makes plans for 1975 and 1976, according to Chairman Frank T. Cary.

The temporary policy was put into effect about Oct. 1. IBM has taken no other belt-tightening actions, he said, adding the firm will spend more on R&D this year compared with last year.

Work Reduction

A softening fourth-quarter order rate has caused Hewlett-Packard Co. to adopt a work reduction schedule. About 13,500 of its 20,000 U.S. employees will take three days off without pay during Thanksgiving week, and manufacturing plants in Singapore and Penang, Malaysia, will begin a four-day work week.

Computer Automation laid off 30 employees at the beginning of October, and Varian Data Machines recently let 80 employees go.

Control Data's computer employees are being asked to take five extra days off without pay during Thanksgiving and Christmas weeks.

Honeywell laid off 1,150 employees in Scotland factories at Newhouse, Bellshill and Uddingston, according to a report in *Computer Weekly*. Honeywell said the move was prompted by a drop in demand for magnetic tape equipment, according to the report.

Adapso Urges Congress To Resolve IBM Suits

MONTVALE, N.J. – The Association of Data Processing Service Organizations (Adapso) has urged Congress to consider a "responsible and logical approach to the resolution of antitrust claims against IBM.

"Computer industry antitrust disputes involving IBM should be dealt with in a reasonable and coordinated fashion, so as to avoid massive duplication and waste of effort, unreasonable burden on the disputants and third parties, inconsistent and inequitable results, and destructive economic and social consequences to the computer industry and the public as well as to IBM itself," Adapso stated.

Congress' approach should incorporate "mediation, arbitration and litigation," the group added.

CW Photos by V.J. Farmer

Lyon Lightstone

ICL's U.S. Entry Reflects New Marketing Philosophy

By Vic Farmer
Of the CW Staff

MONTREAL – The release of ICL Ltd.'s 2903 entry-level computer system in North America [CW, Nov. 20] reflects a reevaluation of its marketing approach, according to Lyon Lightstone, director of marketing services for the UK-based company.

He said the U.S. and Canada have been identified as areas with the most potential and ICL has therefore committed the firm's resources where they can contribute the most good.

In the past ICL maintained positions in some markets only because it had "historically been there," Lightstone said in a recent interview here. But now each market must have adequate growth potential.

Stressing that ICL is the largest non-U.S. computer company in the world, Lightstone said ICL is number one, two or three in the marketplace in regions such as the UK, Eastern Europe, most of Africa and much of the Far East and Australia.

A key area of concern in ICL's reevaluated marketing effort is the fact that nearly 25% of its prospective customers worldwide are U.S.-owned. Unfortunately, according to Lightstone, when a U.S. subsidiary outside the U.S. has decided to go with ICL, the present lack of knowledge about ICL in the stateside corporate headquarters often presents a considerable roadblock to the final sale.

While acknowledging that ICL's past efforts in the U.S. have not been fruitful, Lightstone said the company has heavily committed itself to the U.S. and will evaluate all options – including actively looking for a U.S. partner, agencies, dealerships, mergers or acquisitions.

Recently the firm signed a one-third partnership agreement with Control Data Corp. and NCR in the peripheral development and marketing venture, Computer Peripherals, Inc.

This partnership will hopefully ease Computer Peripherals' entry into the worldwide marketplace.

But the partnership is just one sign that ICL is taking a more aggressive stand in its dealings with U.S. manufacturers. Another ICL representative even hinted that ICL might even be able to be built at less cost at a U.S. manufacturing site.

ICL's future is "irrevocably bound up with the 2900 series and over the next few years it will become our lifeblood in terms of providing a future system for our current users," Lightstone said.

But the company will not discontinue development of its earlier mainframes; instead the philosophy is to "grow and develop current range users to a point where they are ready for the 2900 series." For some users it may be five or 10 years before they will be ready for the 2900, Lightstone added.

Besides the entry-level 2903, ICL recently introduced two large members of its 2900 series, the 2970 and 2980, which are virtual memory machines in the IBM 370/158 and 168 class.

There is, at present, no active timetable for introducing these machines in the U.S. until "we have demonstrated our competence to the marketplace, by successfully selling and installing 2903 systems," Lightstone said.

Canadian Government Assailed For Inhibiting Native Industry

By Vic Farmer
Of the CW Staff

MONTREAL – The Canadian Government is Canada's own worst enemy in its effort to establish a strong native data processing industry, according to Ian Sharp, president of the Toronto-based I.P. Sharp Associates.

Addressing the recent Canadian Computer Conference, Sharp specifically pointed to out-of-date government regulations that heavily discriminate against Canadian industry in favor of U.S. imports.

"The Department of National Revenue, customs and excise branch, permits IBM to apply duty and federal sales tax rates to a slightly marked-up 'manufacturing cost' of its imported equipment instead of on a fair market value," Sharp explained.

He said this ruling was made prior to 1965, when IBM was constrained under a consent decree to offer its merchandise for sale as well as rental.

But the government department, 10 years later, still maintains computer equipment is not sold – only rented – and it therefore proves impossible to establish the fair market value of the equipment in the country of origin, Sharp said.

"If a Canadian company were to make computers from ore mined out of the Canadian ground and were to import nothing, it would pay more to the government in federal sales tax than IBM, say, pays in combined duties and federal sales taxes.

"Not just a little bit more, but almost twice as much," he said.

The way in which the Canadian government has applied and continued to apply tariffs insures that indigenous computer manufacturers will be wiped out, he added.

However, Sharp did not accuse the present Canadian government of deliberately maintaining this discriminatory policy but instead said he saw the continuance of the policy only as a reflection of the tremendous political power of foreign-based multinational corporations.

And he did concede some admiration for the lobbyists who have successfully maintained the policy of favoritism of non-Canadian products.

In light of the one-sided tariffs and taxes, Sharp suggested "practically every native service bureau could provide service in Ottawa, Montreal and Toronto cheaper if it moved lock, stock and barrel to the U.S." (After the speech, Sharp admitted he had evaluated Buffalo, N.Y., as a possible site for his own operation.)

Sharp said he did not advocate a policy of favored status for Canadian firms but argued only to be able to compete both in the U.S. and Canada on an equal and unencumbered status with U.S. firms.

Attack on COTC

Sharp also strongly attacked the government-owned Canadian Overseas Telecommunications Corp. (COTC) for price gouging on international data communications.

In the year ending March 1973, he said, COTC incurred total costs of $26 million and its total operating profit was $18 million.

Ian Sharp

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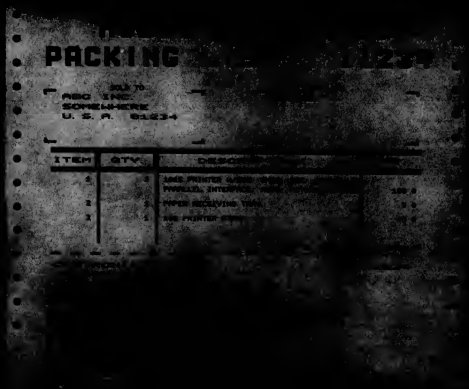

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CENTRONICS

Expanding Foreign Sales

Interdata Merger 'Working Well'

OCEANPORT, N.J. – Interdata's merger with The Perkin-Elmer Corp. is working well, Interdata's president, Daniel Sinnott, reported during a recent interview.

Perkin-Elmer had a "heavy cash reserve and Interdata had lots of good ideas on how to use it," Sinnott explained.

"We are really concerned with the state of the U.S. economy, but as yet we have not felt any slackening of sales because our computers are strong in the petrochemical and power industries and this segment of the marketplace is spending heavily," he added.

One of the minicomputer firm's goals for 1975 is to expand its exports and up its percentage of foreign sales, added Joseph Popolo, director of International Sales.

International Markets

Popolo is studying Mexico and South America, especially the oil-producing countries, as a new market for the company.

In order of potential he ranks Brazil first, followed by Mexico, Venezuela, Chile and Argentina.

In addition to the South American market, Popolo said Canada is one of the company's strongest markets with Germany, Australia, Japan, the UK and France contributing to sales in that order.

In Canada, Popolo said, it's more profitable to have the cabinet work built locally rather than ship it from the U.S., and the company also acquires its TTYs there.

Interdata's rule of thumb on setting up a foreign subsidiary instead of staying with a product representative is based around $1 million in sales in that country. But the company insists that maintenance and software people be sent to school here for at least two months.

Popolo considers the broadening of the international customer base a solid defensive move against the current U.S. recession.

Interdata recently became the sole supplier for the Australian ministry of Defense. In that country Interdata ranks second to Digital Equipment Corp. in minicomputer sales, Popolo said.

Service Bureau Managers Dispel Old Wives' Tales

NEW YORK – Service bureau managers are adapting to some new ways of thinking – and dispelling what were often considered heretical beliefs.

Some have discovered that not only does it pay to let a customer do work on a machine installed at the customer site by the service bureau, but that offering hardware to the customer is a plus in selling services.

Another manager noted during a recent conference here that his best market is with clients who have computers already installed.

"I originally thought it was sacrilegious to even consider letting a customer do some work on a computer that I had installed in his office," said Buck Blankenship, president of Data Processing of the South.

"After all, that's contradictory to what we were trying to do, to sell that service. But we rapidly got away from that fear and are convinced that's the way to go," he said.

Customer Sites

Blankenship's firm has about 19 Sycor 340 terminals installed at customer sites out of a total of 60 to 70 printers. "The profitability that occurs when customers go to data transmission is remarkable, so we have a great deal of incentive for bringing them on to the Sycor units," he noted.

Customers perform as many applications as they can on the terminals, including invoicing, and then transmit the data to the bureau for processing.

"Obviously we've got to make a profit" on this use of the terminal, "so we do make a profit on the installation of the equipment and on selling [the user] applications which he can do on his own terminal.

"Of course, there are those applications he must transmit to us, and in that sense our DP facility also gets business, enabling us to keep growing," Blankenship said.

Fred Kells-Murphy, vice-president of Applied Data Processing, Inc. (ADP) observed that installing distributive intelligence, or key-to-disk devices with remote batch capability, works out well for both the customer and ADP.

"It confines the power of our computer to what it does best: large volume, high input/output processing, which gives us the best cost performance ratio and the customer the lowest price," Kells-Murphy said.

Turnaround has improved greatly, and ADP's charges are lower since it does not provide keypunching.

New Toy

Providing customers with some in-house capability works as a sales tool, Kells-Murphy advised, since it provides them with their own toy, about which the firm's president can brag at cocktail parties.

One of the factors considered by ADP when it decided to enter the on-line field was it felt the impact of System/3 and the minicomputers, "not so much in terms of lost business but lost potential business," he said.

"Truly it has become more difficult to sell batch systems with pick-up and delivery against in-house computers, no matter how inefficiently that computer is run or what the inadequacies are in the reports.

"The controller or treasurer or president has the honor and glory of having his computer to talk about at cocktail parties," Kells-Murphy explained.

Sy Rosen, executive vice-president of Anstat, Inc., a firm founded for on-line services, said his firm directs its marketing to the computer user who is "spending twice as much as he thought he would and getting only half as much." There are many of these users, especially those who have small machines, he added.

Executive Corner

■ Eugene R. White has been elected president and chief operating officer of Amdahl Corp. As president, he succeeds Dr. Gene M. Amdahl, founder, who will remain as chairman of the board of directors.

■ Burroughs Corp. has appointed Ben L. Rouse vice-president and group executive, International Group.

■ James S. Gilliland and James E. McKee have been elected board members of Data Communications Corp.

■ William B. Mahoney has been named vice-president of sales for Bowne Time Sharing, Inc.

■ Angelo N. Bertone has been appointed to the new position of national service manager for Data General Corp.

■ Informatics, Inc. has appointed Samuel Levine director/network systems.

■ William R. Newlin and John R. Thorne have been elected to the board of directors of On-Line Systems, Inc.

■ Rolm Corp. stockholders appointed to their board of directors Dr. C. Lester Hogan and Tom Patjo Jr.

■ Eugene W. Courtney has been named president and chief operating officer of Digital Scientific Corp.

■ Robert J. Smallacombe, president of Tal-Star Computer Systems, Inc., has become vice-president of General Automation, Inc., Tal-Star's parent company.

■ Computer Peripherals, Inc. has elected Thomas A. Sherby executive vice-president and a director of the firm.

■ Ronald J. Koval has been promoted to executive vice-president of Androcor, Inc.

■ John Caruso has been named vice-president and general manager for Simplified Data Processing Systems.

■ Incoterm Corp. has elected John T. Clifford senior vice-president.

■ Stephen R. Levy has become a senior vice-president at Bolt, Beranek and Newman, Inc.

■ Donald R. Haworth has been named senior vice-president for the international operations of Computer Leasing Co.

■ DuRay E. Stromback has been appointed vice-president and group executive, federal and special systems group, for Burroughs Corp. E. Gary Clark was also promoted by the corporation to vice-president, large account development.

■ J. Todd Murphy has been named vice-president, multinational relations, at Control Data Corp.

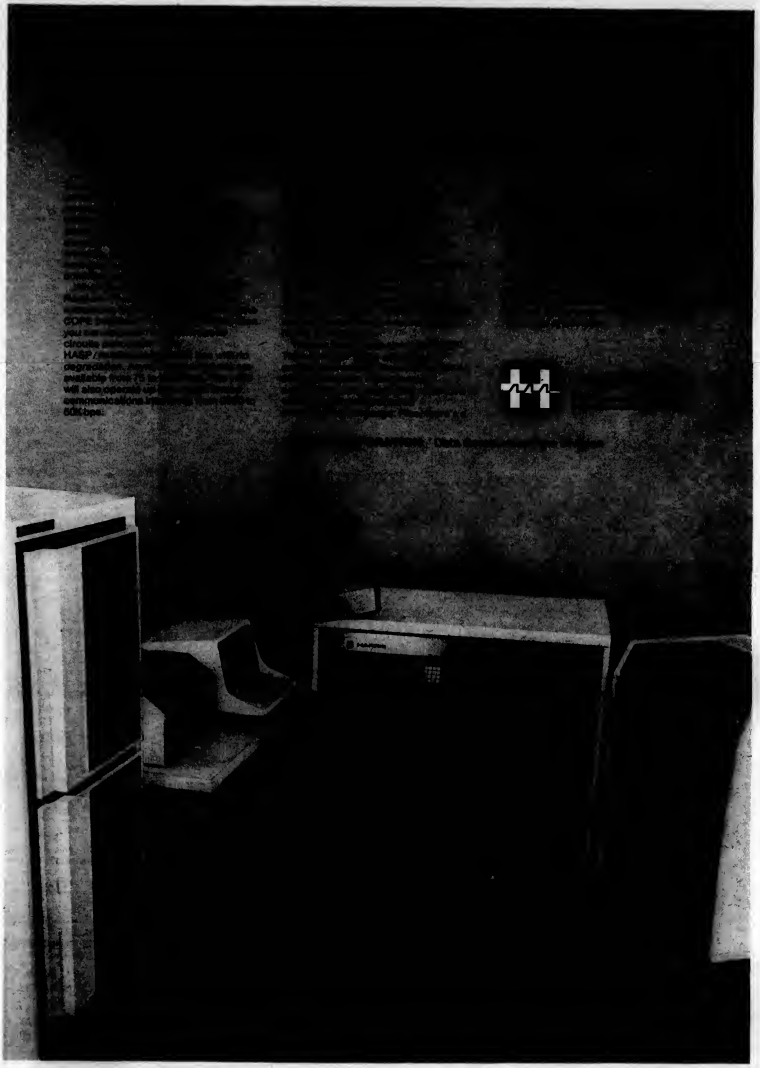
■ Norton G. Tucker has been elected vice-president, manufacturing for Comten, Inc.

■ Elbert Matthews has been named vice-president in charge of sales and operations of the Communication Systems Division of Informatics, Inc.

■ Comserv Corp. has appointed Phil Logan vice-president of systems and programming services.

■ Bryant A. Campbell has joined Xebec Systems, Inc. as vice-president, operations.

■ Steve S. Popovich has become senior vice-president of engineering and program development at California Computer Products, Inc.



Announces 80 Layoffs

Varian Regroups to Meet Competition

IRVINE, Calif. – Varian Data Machines has announced the layoff of 80 people in positions throughout the company and a major reorganization that gives two department heads the title of vice-president.

Dr. Donald Duncan, Varian president for just two months, announced the changes as part of his effort to make the company "lean and cost-competitive," he said in a recent interview.

The reorganization, which will give management tighter control of marketing, places all sales functions under Jim Orris, vice-president of sales, and all administrative and technical sales support functions under Gordon Watson, named the vice-president of systems development.

The move is "not a housecleaning," according to Duncan. No senior people will be replaced.

"We want a strong sales organization and a coordinated sales support organization we can lean on very hard," Oris added.

The company, Duncan said, does most of its business with users who "want performance and can afford performance" for applications such as simulation and data acquisition in banking.

Varian's latest major banking sale is a computer network the State Bank of Czechoslovakia will use for commercial transactions throughout that country.

Duncan estimated the final contract to be worth between $2 million and $6 million.

Domestically, the bulk of Varian's orders come from users doing certain computational jobs that previously required larger, more expensive systems such as the Univac 1108 and Control Data 3800, according to Duncan.

While he considers the market "a little depressed" at the present time, Duncan said sales have not fallen off and the company expects to "achieve its quota by pushing its high performance message switch."

Varian is going to be profitable, and Duncan is devoting 100% of his efforts toward that goal, he said.

"Profits and growth are both mandatory," Duncan said.

Varian Associates' president, Norman Parker, and Duncan have known each other professionally for many years, according to Duncan, and Parker hired him for his ability to "fix things."

Of the V80, a system whose announcement the previous administration said was imminent but has not yet arrived, Duncan had only this to say: "The V80 is a separate issue and has nothing at all to do with our layoff and reorganization."

The announcement of the new system must be "consistent with our product strategy, and it's my responsibility to make sure we're ready before we do so," he said.

Chapter 11 Aid Sought by Photon

WILMINGTON, Mass. – Photon, Inc. has filed for protection under Chapter 11. Under the Federal Bankruptcy Act, the company can continue to operate but seeks court protection against creditor lawsuits while it attempts to resolve a plan for paying debts.

Clifton Sink, Photon's president, and Chester Quinby, vice-president of marketing, resigned this fall. The company is being managed by a four-member executive committee.

Consulting, Software Companies Urged To Go Abroad to Help Assure Survival

NEW YORK – Software and consulting firms should attempt to go multinational in order to buffer economic downturns from individual nations, according to Charles Lecht, president of Advanced Computer Techniques.

Leveraging income from business abroad would help insure survival if the U.S. encounters rough financial conditions, he added.

Europe, although not impervious to economic vagaries, will be about one cycle behind the U.S. he added.

The other alternative to survival by a consulting or software firm would be to become highly specialized, Lecht suggested.

One indication that the U.S. is heading for a downturn is that consulting firms are doing so well, he noted. Contrary to popular opinion he said, consulting firms are generally the last out and the last in, and as firms now are holding back on capital investment they are hiring outside help. The boom for consulting firms is a "sure indicator companies are putting on the breaks," he said.

Small firms should take a cue from companies such as IBM and Univac which are now doing a substantial part of their business abroad.

"There's no reason why small firms should think they're impervious to the things that are frightening the big companies," he added.

ACT has contracts in Italy, France, Finland, Iran and Yugoslavia.

Orders & Installations

The U.S. Army has ordered four System 8000 optical character readers from Lundy-Farrington Division of Lundy Electronics & Systems, Inc. for remote message entry.

Puritan-Bennett Corp. has ordered a 6025 system from Honeywell as part of a five-year applications development and expansion program.

The Greater Lowell (Mass.) Regional Vocational Technical School has ordered a Xerox 560. Also on order is Xerox/Aces, a set of programs to process student and administrative accounting.

An HP-3000 minicomputer system with new student information software has been ordered from Hewlett-Packard by Educational Data Systems. The software package (SIS/3000) will establish a data base on all families living in a four-county area of eastern Nebraska, distribute student grades and maintain attendance records.

Computer Automation, Inc. will install $1.2 million worth of minicomputers at Finnigan Corp., a manufacturer of computerized analytical systems. The Finnigan systems will be in applications ranging from industrial and geological analyses to criminalistics.

The Alabama State Docks Department has installed a Univac 90/60 system for billing, railcard accounting, payroll, accounts receivable, inventory and other applications.

A Honeywell Series 60 Model 62/60 will be installed by Valley Industries, Inc., a manufacturer of industrial steel products. The system includes 81K bytes of main memory and 87M bytes of disk storage.

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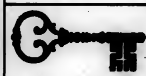

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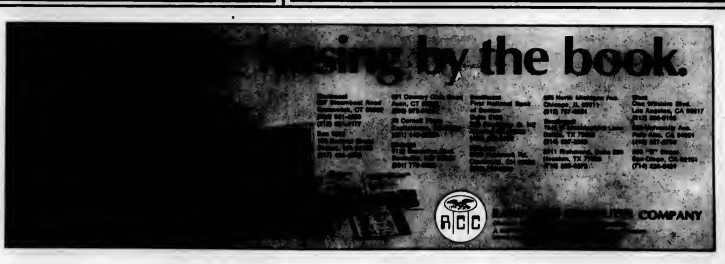

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Rentals Make Inforex Revenues Climb

BURLINGTON, Mass. – Inforex's third-quarter and nine-month revenues climbed, reflecting added income from rental and service as well as record long-term lease revenues.

Earnings in the third quarter lagged behind those of the year-ago period, although they showed an improvement over losses accumulated during the previous quarters this year.

Revenues for the quarter rose to $13.1 million from $10.3 million in the same period last year, although there were no sales to Leasing 11, a unit established for third-party sales.

In the third 1973 quarter, Inforex recorded $2.1 million in sales to Leasing 11 and $4.7 million in the nine months of 1973.

Rental and service revenues during the quarter were a record $5.7 million compared with $4.4 million in the same 1973 period.

Long-term lease revenues also reached a record high, accounting for over half of the quarter's $7.2 million in other sales.

On a year-to-date basis, long-term lease revenues have increased threefold compared with the previous year. Sales to overseas distributors are up by 40%, the firm said.

Inforex earned $226,000 or 8 cents a share including a $53,000 tax credit, compared with $854,000 or 31 cents a share in the year-ago period, when there was a $490,000 tax credit.

For the nine months, revenues totaled $35.6 million compared with $27.1 million in the same 1973 period.

Earnings for the nine months stood at $164,000 or 6 cents a share, including a $53,000 tax credit, compared with $2.6 million or 95 cents in the year-ago period in which almost half, $1.2 million, was from tax credits.

Chairman T.C. Cronin said that although the quarterly results were still below an acceptable level of profitability, they reflect further progress toward the company's goals of expense control and balanced growth.

Modcomp, Data General Report Record Earnings and Revenues

Record sales and earnings for the year were the story at Data General Corp., while Modular Computer Systems, Inc. (Modcomp) had a similar story for its third quarter ended Sept. 27.

Data General's earnings for the year rose to $9.9 million or $1.22 a share from $6.7 million or 83 cents a share in the year-ago period.

Revenues jumped to $83.2 million from $53.3 million in the year-ago period.

In the fourth quarter, earnings rose to $3.6 million from $2.5 million while sales climbed to $32.1 million from $19.4 million in the same period last year.

At Modcomp, earnings for the third quarter rose to $522,000 or 19 cents a share from $400,000 or 18 cents a share in the year-ago period, when there was a $190,000 special credit.

Revenues Double

Revenues more than doubled to $6.8 million from $3.3 million in the same 1973 quarter.

Revenues for the nine months also doubled, to $17.8 million from $8.3 million last year.

Modcomp's nine-month earnings reached $1.6 million or 57 cents a share compared with $957,000 or 45 cents a share in the same period last year, which included a $454,000 credit.

Looking back. And ahead.

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It's good to stop every once in a while and ask yourself "What happened?" And that's just what we'll be doing in our annual Year-end Review and Forecast. All the important stories of the '74 computer world will be covered from the perspective of passed time. Then, of course, we'll take out our well-worn crystal ball and cast our eyes to the future. What's to be expected in '75? Good or bad, we'll take a shot at it in our special, combined December 25th and January 1st issue. If you're in the computer world, this is one *Computerworld* you should be reading very carefully.

If you're marketing to our world, put this issue on your schedule. Color close is December 6th. Black and White closes December 13th. Contact your *Computerworld* salesman for all the details. Or call Judy Milford at (617) 965-5800.

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Analog Devices Sales Rise 42%

NORWOOD, Mass. – Analog Devices' third-quarter sales rose 42% over last year to $8.16 million and earnings climbed 38% to $479,000, the company said.

Earnings per share rose 35% from 26 cents to 35 cents.

Nine-month earnings and revenues showed similar gains, with sales up 42% to $22.2 million and earnings up 40% to $1.34 million. Earnings per share were 99 cents, 38% higher than the 72 cents recorded in the same period in 1973.

Earnings Reports

KEYDATA
Year Ended July 31

	1974	1973
Shr Erng	.....	$.30
Revenue	$11,870,000	9,501,000
Spec Item	e(2,405,000)	400,000
Earnings	(2,992,000)	847,000
3 Mo Shr	.09	.....
Revenue	2,881,000	2,635,000
Spec Item	e(2,405,000)	116,000
Earnings	(3,597,000)	243,000

a-Change in accounting method for marketing and product development costs.

BOLT BERANEK AND NEWMAN
Three Months Ended Sept. 30

	1974	1973
Shr Erng	$.46	$.21
Revenue	6,447,800	5,149,500
Earnings	566,200	264,200

INFORMATION MAGNETICS
Nine Months Ended Sept. 28

	1974	1973
Shr Erng	$.32	$.39
Revenue	17,284,099	13,244,328
Earnings	407,660	499,702

BINGER
Three Months Ended Sept. 30

	1974 (000)	1973 (000)
Shr Erng	.....	$1.15
Revenue	$696,022	592,091
Earnings	(31,479)	20,981
9 Mo Shr	.....	$.54
Revenue	1,898,600	1,749,049
Earnings	338	82,996

XEROX
Three Months Ended Sept. 30

	1974 (000)	1973 (000)
Shr Erng	$1.04	$.97
Revenue	910,000	783,000
Earnings	82,000	77,000
9 Mo Shr	$.15	$.82
Revenue	2,600,000	2,200,000
Earnings	250,000	223,000

GENERAL COMPUTER SYSTEMS
Year Ended June 30

	1974	1973
Shr Erng	$.64	$.47
Revenue	15,136,928	9,807,779
Tax Cred	501,945	345,054
Earnings	1,059,281	774,070

MEASUREX
Three Months Ended Aug. 31

	1974	1973
Shr Erng	$.33	$.25
Revenue	10,068,000	7,377,000
Earnings	1,034,000	666,000
9 Mo Shr	.92	.68
Revenue	28,899,000	18,595,000
Earnings	2,759,000	1,828,000

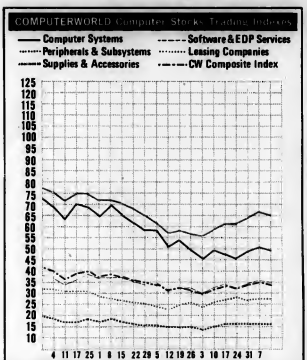
MSI DATA
Three Months Ended Sept. 29

	1974	1973
Shr Erng	$.22	$.15
Revenue	8,481,057	4,930,332
Earnings	423,564	283,469
6 Mo Shr	.38	.25
Revenue	16,026,822	9,104,212
Earnings	742,250	495,884

TRILOG ASSOCIATES
Year Ended July 31

	1974	1973
Shr Erng	$1.00	.....
Revenue	1,794,104	1,738,812
Spec Item	49,500	e(190,938)
Earnings	114,330	(742,917)
3 Mo Shr	$.23	.....
Revenue	476,149	374,240
Spec Item	11,958	e(190,938)
Earnings	27,083	(650,471)

e-Loss on sale of investment.



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